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AMERICAN

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NOTES ON THE FRATERNAL BENEFICIARY CORPORATIONS DOING BUSINESS IN MASSACHUSETTS.

BY FRANCIS B. FORBES.

The importance from a public point of view of all that concerns Fraternal Beneficiary Corporations may be appreciated by the fact that the several hundred societies, large and small, reported by the Insurance Commissioner as doing business in Massachusetts during the year 1900, dealt with an aggregate income of some $26,700,000, and with a membership at the close of the year of nearly 1,140,000. These figures, however, include not only all the business done in Massachusetts itself, but also the transactions of the larger societies in other States of the Union and in Canada.

Whether the system of life and disability insurance adopted by Fraternal Societies is generally sound will not be considered in these notes. On the one hand, it is known that actuaries are generally opposed to the assessment plan, as offering a smaller chance of ultimate benefit than the usual policies issued at fixed premiums. It is also known that some of the more important of these societies have discovered by experience grave defects in their original schemes, which they are doing their best to remedy, while it is feared that disaster may await those who cannot, or will not, follow this wise example. On the other hand, it must be admitted that certain more immediate advantages offered by the better class of Fraternal Benefit Corporations will probably continue to attract numbers of people who are confident that the future will take care of itself. It must, moreover, be acknowledged that thousands of families in this country have, for years past, received more substantial aid and comfort from many of these associations than was readily available through other agencies known to them.

Whatever general view may be taken of the fraternal system of life assurance, the ability of any society to meet its engagements at a given moment is not only of supreme interest to the beneficiaries themselves. It is also of consequence to every city and town, whose public charity may be called upon to assist widows and orphans left penniless after, perhaps, heavy assessments paid during the lives of their bread-winners.

The legislatures of various States have recognized the importance of these questions in different degrees, and, in Massachusetts, several laws have been passed for the regulation of Fraternal Beneficiary Corporations, all of which are now embodied in *Chapter 119* of the *Revised Laws.* To the impartial student, however, all of these measures bear marks of having been framed more in accordance with the wishes of the societies themselves than with a vigilant regard for the protection of the public. For, although our most recent legislation has been a distinct step in advance, the Insurance Commissioner is still left without adequate powers of supervision, and there remains ample chance for certain people to trade upon the credulity of the ignorant poor for their own selfish ends, and in this way to bring the really philanthropic societies into disrepute.

It is difficult to see why the Commissioner should be denied as full powers over Fraternal Beneficiary Corporations as he already exercises over assurance companies on the assessment plan, and in fact over all others doing business under his Department. But for those who are familiar with the by-play of politics in the State House, it is no secret that successful opposition to extended control by the Commissioner may be expected to continue as long as a large majority of those elected to the General Court are members of one or more of these societies.

It is the purpose of this paper to show how urgent is the need of reform, by a statement of the existing law on this point, and by statistics which show the practical results of such imperfect control.

The following are the provisions of *Chapter 119* of the *Revised Laws* relating to the powers of control and examination vested in the Commissioner.

Section 14 requires each Fraternal Corporation to report annually to the Commissioner the location of its principal office in the State together with the names and addresses of certain officers. As regards the business of the preceding calendar year, it must "make under oath such statement of its membership and financial transactions"— with such other information "as the Commissioner may require to show its business and standing; and at all times shall make under oath all statements relative to said corporation required by said Commissioner." Penalties follow for false or fraudulent declarations.

Section 15 enacts — "The Insurance Commissioner shall, upon request of a domestic corporation doing business on the lodge system personally, or by some person designated by him, visit such domestic corporation and thoroughly inspect and examine its affairs, especially as to its financial condition. When he determines it to be prudent for the protection of the certificate holders in the Commonwealth he may in like manner visit and examine, or cause to be visited and examined by some competent person or persons whom he may appoint for the purpose, any foreign fraternal beneficiary corporation applying for admission or already admitted to do business in this Commonwealth, and such foreign corporation shall pay the expense of such examination. For the purposes aforesaid the commissioner or person making the examination shall have free access to all the books and papers that relate to the business of such corporation, and to the books and papers kept by any of its organizers, and may summon and administer the oath to and examine as witnesses the directors, officers, agents, organizers and trustees of any such corporation, and any other persons, relative to its financial affairs, transactions and conditions. He may in his discretion accept, in lieu of such examination, the examination of the insurance department of the State, the Dominion of Canada or a province thereof in which such foreign corporation is organized."

Section 19, which is the most important, is as follows: —

"If the insurance commissioner on investigation is satisfied that a corporation organized or doing business under the provisions of this Chapter has exceeded its powers, or has failed to comply with any provisions of law, or has conducted business fraudulently, or that its condition is such as to render its further proceedings hazardous to the public or to its certificate-holders, or if such corporation shall vote to discontinue its business, he shall report the facts to the attorney-general, who may thereupon apply to the Supreme Judicial Court or to the Superior Court, which shall have jurisdiction in equity of such application for an injunction restraining such corporation in whole or in part from the further prosecution of business. Before making such report to the attorney-general the insurance commissioner, if he is satisfied that the corporation has exceeded its powers, or has failed to comply with any provision of law, or has conducted its business fraudulently, shall notify such corporation of particulars in which he decides it has exceeded its powers, or of the provisions of the law with which it has failed to comply, or of the fraudulent matter in the conduct of its business, and shall give such corporation a reasonable opportunity to comply with the law or amend its methods. The application shall state the specific facts relied upon as in excess of power, or as neglect or violation of law, or as constituting fraudulent conduct of business. The court may issue such injunction forthwith, or, upon notice and hearing thereon, may issue an injunction or decree for the removal of any officer of said corporation, and may substitute a suitable person to serve in his stead until a successor is chosen, and may make such further orders and decrees as the interests of the corporation, the certificate holders and the public may require; and may, after a full

hearing, appoint a permanent receiver to take possession of the property and effects of the corporation, and to settle its affairs, subject to such rules and orders as the court may from time to time prescribe. No such injunction shall issue, and no order, judgment or decree appointing a temporary or permanent receiver shall be made or granted, otherwise than upon the application of the attorney-general, on his own motion, or at the relation of the insurance commissioner, whether the commonwealth or a member, or other party seeks relief."

The above powers of the Commissioner may be briefly resumed.

He can examine the books and papers of any foreign corporation whenever "he deems it prudent for the protection of the certificate holders in the Commonwealth." In the case of a domestic society, he can do the same thing only at the request of the corporation itself. So far, the Commonwealth gives more security to citizens who become members of a foreign society than to those who join a home organization.

He can begin proceedings against any society when "on investigation," he is satisfied that it has neglected or violated the law, or in other ways has acted wrongfully. But, in the case of a domestic society, his powers of "investigation" are limited to a demand for statements on specific points, which statements the officers are bound to furnish under oath, so that he is practically left at the mercy of any one who is prepared to risk the penalties for false declarations.

Even then, before the commissioner can lay the case before the attorney-general, from whose own motion all legal action must proceed, he must notify the suspected society and give it "a reasonable opportunity to comply with the law or amend its methods."

On the whole, therefore, although adequate penalties are provided by the law, it would seem that any manager of a domestic society, who is ready to take the chances, has long odds in his favor against incurring those penalties himself.

In singular contrast to the above are the provisions of *Chapter 120* of the *Revised Laws*, which embodies the enactments about assessment insurance.

Section 17 is as follows :—

> "Every corporation doing the business of insurance under the provisions of this chapter shall, annually on or before the first day of February, return to the Insurance Commissioner, in such manner and form and including such information as he may require, a sworn statement of its affairs for the year ending on the preceding thirty-first day of December. Such statement shall be signed and sworn to by the president and secretary of the corporation, or, in their absence, by two of its principal officers. A corporation which wilfully makes, and a person who wilfully makes, oath to or subscribes a false statement, if the statement is required by law, shall be punished by a fine of not less than five hundred nor more than five thousand dollars, and such person, if he has made oath to such statement, shall also be guilty of perjury. The Insurance Commissioner may personally or by his deputy, examiner, or chief clerk, visit each domestic insurance corporation doing business on the assessment plan, and thoroughly inspect and examine its affairs to ascertain its financial condition, its ability to fulfil its obligations, and whether it has complied with the provisions of law. If he considers it prudent for the protection of the policy holders in this commonwealth, he may in like manner visit and examine, or cause to be visited and examined by some competent person or persons he may appoint for that purpose, any foreign insurance company doing business on the assessment plan, applying for admission or already admitted to do business in this commonwealth, and such company shall pay the expense of such examination, including the expenses of the Commissioner or the persons he may appoint and the expenses and compensation of assistants employed therein. For the purposes aforesaid the Commissioner or person making the examination shall have free access to all the books and papers that relate to the business of such company, and to the books and papers kept by any of its agents, and may summon, administer the oath to, and examine the directors, officers, agents and trustees of any such company and any other persons, in relation to its affairs, transactions and conditions."

Here are certainly ample powers of supervision, and if the the commissioner had been authorized to exercise them in the case of Fraternal Societies, our State system of insurance laws would have been, at any rate, consistent. But, by the first section of the same Chapter 120, Fraternal Beneficiary organizations are specially exempted from these and all other of its provisions, although there is no logical motive for such exemption. On the contrary, there is every possible reason for similar regulations for fraternal societies, inasmuch as their business is supported by the assessment of members, and their income is practically restricted to such assessments by section 6 of Chapter 119 under which they work. Yet every attempt to introduce analogous provisions into the Acts governing them has been stifled by their friends in the General Court.

While it is of primary importance that the Commissioner should be able to satisfy himself at any time of the solvency of Fraternal Societies collecting mortuary assessments, he should also, in the spirit of the above quoted law, be empowered to examine how far the finances of each organization are honestly and economically managed in the interest of the certificate holders. It is chiefly from this point of view that I have attempted to show the necessity of strengthening the authority of the insurance department, by presenting an analysis of the latest official statistics for the years 1899 and 1900.

The inquiry has been restricted to those societies which had a membership of at least 500 at the close of each year, and from the Commissioner's reports (Statistical Table 2, in each case) the following particulars have been drawn: —

(1) Number of members on December 31st.
(2) Total income from all sources.
(3) Losses and claims paid; and
(4) Expenses.

From these, the percentage of income absorbed by expenses was calculated to show the *relative economy of administration in the several societies.*

The data on which my conclusions are based are thus above criticism by the Fraternal Organizations themselves, because they are taken solely from the published statistics which their own officers have filed under oath with the Commissioner. It is obvious that the few details given in the Tables are far from telling the whole story, and I may add that they do not even tell their own story as correctly as might be wished. For instance, some of the larger societies, with subsidiary bodies, do not include in their reports to the Insurance Department the local expenses of these branches, while others give them under both income and expense accounts. I am led to understand that the Insurance Department is devising a plan to ensure greater uniformity in the statements rendered, and in the meantime I believe that neither my classification nor my averages will be materially affected by this discrepancy. Certainly an analysis of the figures will bring to light certain broad and salient facts which demonstrate the necessity of stricter methods of examination than are practicable under existing laws.

After tabulating the statistics of the two years, with the societies arranged according to the percentage of income absorbed by expenses of management, it appeared that the average rate was about 8 per cent, but with a wide range from 1 to 78 per cent. As the same statistics have been finally grouped under another form, these two tables are not published here, but I may state that, for each year, *the dominant rate was below five per cent.* Under this percentage there were in 1899 some 373,000 members with aggregate incomes of nearly $14,600,000 while in 1900 the total income remained about the same, but the membership had increased to some 455,000. At the other end of the list was found a membership of about 146,000 belonging to societies with aggregate incomes of $2,163,000 in 1899, and of $2,609,000 in 1900, whose expenses for purposes other than the payment for losses and claims ranged between 25 and 78 per cent.

Now it is safe to assume that any professedly philanthropic insurance or casualty society which absorbs more than half of its income in expenses of management leaves its accounts open to question, and that something must be decidedly wrong when two-thirds or three-quarters of the money collected go for other purposes than the payment of death or disability claims. On the other hand, it is well known that many of these Fraternal Societies aim at providing, in one way or another, opportunities for social gatherings of their members, and for the cultivation of good-fellowship among them. Such purposes, within reasonable limits, are only to be commended, but it would be impossible to draw the line between such legitimate expenditure and careless or deliberate misdirection of funds, without a more detailed analysis of accounts than is necessary for the purposes of this inquiry.

Furthermore, the law forbids the employment of paid agents, except that "corporations which transact business as fraternal societies on the lodge system may employ organizers in the preliminary organization of local branches, and members, as officers or deputies, to assist members of weak and inactive local branches to increase their membership, provided their compensation does not depend upon and is not affected by such increase, and corporations which limit their certificate-holders to a particular order or fraternity may employ and pay members for securing new members, and any corporation may pay local collectors." (Section 16, Chapter 119, Revised Laws). But the vitality of such societies depends, in the first place, on their ability to obtain new members in the place of those who die or drop out, and there is no doubt that circumstances compel some of them to spend what may appear to be disproportionate sums for the "organizers," etc., allowed by law.

On the whole, however, in spite of the difficulty of tracing a border line between reasonable and extravagant expenses, I am disposed to think that a division may be made which will answer all practical purposes. More than half the aggregate income of the Societies is managed at a cost of less than five per cent, and about a tenth of the whole at rates exceeding twenty-five per cent, while the average rate is eight per cent. It would seem, therefore, that no society, whose rate of expenditure reaches or exceeds twenty per cent of its income, can complain if it is placed in a different category from those managed at a cost of three or four per cent. Accordingly I have divided all the Societies into two classes: —

Class A. — Those with expenses *less* than 20 per cent of income; and

Class B. — Those with expenses *over* 20 per cent of income.

Such a classification must be, to a certain extent, arbitrary, and some societies whose management is above reproach may perhaps be found in rather indifferent company; but, with the reservations already made, it is believed that no substantial injustice has been done.

Under one or the other of these classes I have placed all the societies, which are also grouped according to the method adopted by the Insurance Department, as follows:—

Group I. Massachusetts Societies under the Lodge System.

These are societies whose membership is not limited to a special category of persons, and which may comprise any number of subordinate local branches, under a supreme governing body. The lodges must have "a ritualistic form of work," and each lodge must meet at least once a month.

Group II. Massachusetts Societies under the Branch System with restricted membership.

Group. III. Massachusetts — Miscellaneous.

Group IV. Societies from other States under the Lodge System. These are the only "foreign" fraternal beneficiary corporations legally authorized to do business in the Commonwealth.

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Finally, as a further basis of comparison, I have calculated the *percentage of losses and claims paid, represented by the expenses of each Society.* The reasons for this will be fully discussed later on.

In the following Tables 1 and 2 will be found a concise summary of all the statistics for the two years 1899 and 1900, for full details of which the reader is referred to the Appendix.

The importance of the numbers of people interested in these Fraternal Beneficiary corporations, and of the sums of money annually controlled by them, has been already indicated. It will be interesting to point out at once some general results which this mass of figures yields on analysis.

The first thing to be noted is that the membership of the societies in Class A (those with a rate of expenditure less than 20 per cent of their income) comprised over four-fifths of the aggregates for both years. In like manner the incomes of the societies in Class A were about 90 per cent of the grand total in 1899 and 1900, with an absolute increase for the second year of nearly $2,500,000. When it is realized that, for the whole of Class A, the average rates of expenditures were only 5.1 per cent of income for both years, it can be seen at once that the societies, whose accounts are open to question from the point of view of this inquiry, represent only a small proportion of the whole, as regards either numbers or amount of money involved.

I wish to say here, with all possible emphasis, that the integrity and ability with which the greater societies in Class A are administered deserve the highest praise and respect. These feelings will be shared, I am sure, by all who study the statistics which, in their present form, are probably now brought together for the first time, for they show results attainable only by an amount of devotion and volunteer work on the part of the responsible officers, such as is far from common in our days.

This much said, I must add with equal frankness that I have only one fault to find with the managers of some of these bodies. It is this. Without wishing to make too sweeping assertions, I cannot blink at what I believe to be a fact that, among these powerful corporations, some who have not actively opposed have done nothing to promote such legislative reforms as are needed to establish an efficient control by the Insurance Department. Resenting a supervision which they may be justified in treating as needless in their own cases, they have joined forces with others whose reasons for dreading compulsory examination by the Commissioner are by no means so avowable. Worse than this, their refusal to submit themselves to an official inspection which they must have passed with flying colors, has assured immunity to that small but dangerous class of societies to whom the same form of audit would have been fatal. Much may be pardoned to a pride which comes from conscious rectitude, nevertheless the public is entitled to complain when such pride is distorted so as to turn good men into virtual, if unwitting, accomplices of others whose cloak of benevolence is only a masquerade, and whose unworthy practices must end by giving a bad name to the whole Fraternal Benefit system.

I have already laid stress on the relatively small membership and incomes of the societies whose management is extravagant or worse. Yet, after making all possible allowances, the evil they are permitted to work under cover of the laws is wide-spread and serious enough, as will appear from what follows: —

Class B (societies whose expenses are over 20 per cent of their income) comprised, in 1899, a membership of 147,500 with an aggregate income of $2,187,000, of which $1,384,000 were paid for losses and claims at a cost of $823,000, or over 37 per cent of the income. In 1900, the total membership of the Class was 164,000, and the aggregate income $2,888,000, showing considerably heavier average assessments per capita. Losses and claims amounting to $1,749,000 were paid, and the expenses were $942,000, or

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nearly 33 per cent of the income. It will further be remarked that, while in Class A the expenses during the two years were only 5.5 and 5.6 per cent, of the amounts paid for lossess and claims, the average rates for Class B were, respectively, 59.5 and 53.8 per cent.

A better view may, however, be obtained from an examination of the summary by groups for each year, as shown in the following Tables 3 and 4.

In the discussion of these tables, I shall entirely exclude Group III, of Massachusetts miscellaneous societies, more than half of which have between 500 and 1000 members, while only one has about 2000 and one other about 4000. They are all organized for meritorious purposes, and, as far as I am informed, their work is conducted in the interest of their members as understood by the members themselves. Accordingly, even though the percentage of expenses bring a few of them within our Class B, I wish to avoid even a suggestion of criticism for any one of the group.

The only two groups which can be directly compared are those comprising societies on the Lodge system, No. I being for Massachusetts and No. IV for other States. It will be noticed that while, in Class A, Massachusetts had 9 societies in 1899, and 10 in 1900, as against 14 and 17 Foreign, there were, of Class B, 12 domestic societies in 1899 and 14 in 1900, against only one Foreign for each year. Moreover, the average percentage of income shown by the expenses of the Massachusetts corporations was 33.9 in 1899 and 30.2 in 1900, while the percentages for societies from other States were just beyond the limit of Class A, being only 25.8 and 22.3, respectively. A reference to the Appendix will show that half of the domestic societies spent over 40 per cent of their income for other purposes than payment of losses, while in three cases the figures ran from 66 to 77 per cent in 1899 and from 69 to 72 per cent in 1900.

Group II (Massachusetts Branch system) stands by itself, and for both years is entirely in Class B. In 1899 there were 9 societies with a membership of about 47,000 and incomes of some $528,000, of which 49.2 per cent went in expenses. These amounted to $269,904, or 103 per cent of the sums paid for losses and claims. In 1900 there were only 8 societies with nearly 45,000 members. Out of an income of $516,000 they disbursed $238,558 for losses and claims, and the larger sum of $239,942 for expenses of management.

It is time to draw attention to the special significance of the ratios between expenses and the corresponding figures of losses and claims paid, which have just been noticed.

A reference to the appendix will show that, throughout the whole list of societies in Class A, the ratios of expenses to income and of expenses to losses paid tend to run very closely together. The inferences are clear, not only that the management has been economical, but that the assessments have been almost wholly applied to the payment of losses. On the other hand, certain societies will be found in Class B where so much is paid out for expenses and so little for losses as to raise a strong suspicion that the main object of their existence can hardly be a philanthropic desire to settle death or disability claims.

To justify this statement I append Tables 5 and 6 with detailed statistics for 1899 and 1900 of Massachusetts societies in Groups I and II, whose expenses are more than 75 per cent of their payments for losses and claims. Whatever criticism may be made on my classification, it will at any rate be acknowledged that such percentages as these throw upon the managers the burden of proof that all claims presented had been equitably settled as well as that the other disbursements were legitimate. Ten societies are common to both lists, and it can be seen that, as regards 1899, fully seventy-five per cent, and as regards 1900, over ninety-five per cent of the total membership and income were subjected to disbursements for management absolutely greater than those for the settlement of claims. In one

TABLE 5.—1899.

STATISTICS OF SOCIETIES (CLASS B) WHOSE EXPENSES EXCEEDED 75 PER CENT OF CLAIMS PAID.

GROUP I.—MASSACHUSETTS.—LODGE SYSTEM.

Names.	Number of Members.	Income.	Losses and Claims Paid.	Expenses.		
				Amounts.	Per Cent of Income.	Per Cent of Losses.
Portuguese Fraternity of the U. S. A.	1,067	$8,715	$3,808	$2,920	33.5	77.0
Loyal Knights and Ladies	580	5,773	2,985	2,850	49.4	95.5
Union Fraternal League	1,545	16,686	8,196	7,781	46.6	95.0
United States Indemnity Society	4,294	42,082	16,279	22,954	54.5	141.0
Colonial Life Association	1,501	19,314	4,200	6,598	34.2	157.0
Sun Indemnity Assurance Society	1,298	9,822	2,718	6.551	66.6	241.0
Family Protective Union	1,399	10,159	2,648	7,253	71.4	274.0
Fidelity Benefit Association	1,409	13,581	1,220	10,463	77.0	858.0
Totals for Group I	13,093	$126,132	$42,054	$67,370	53.4	160.0
GROUP II.—MASSACHUSETTS.—BRANCH SYSTEM.						
Loyal Protective Association	7,142	$81,016	$43.708	$33,066	40.8	75.0
Red Men's Fraternal Accident Association	985	11,806	6,381	4,946	41.9	78.0
Masonic Casualty Company	1,726	22,975	10,337	9,051	39.4	88.0
Wildey Casualty Company	2,847	18,645	9,245	10,238	54.9	111.0
Ridgely Protective Association	16,258	182,768	81,188	106,317	58.2	131.0
Brotherhood Accident Company	7,715	71,802	27,158	40,000	55.7	147.0
Masonic Protective Association	6,331	75,201	25,965	41,878	55.7	161.0
Totals for Group II.	43,004	$464,213	$203,982	$245,496	52.9	120.0
TOTALS FOR TWO GROUPS.						
Group I	13,093	$126,132	$42,054	$67,370	53.4	160.0
Group II	43,004	464,213	203,982	245,496	52.9	120.0
Aggregate	56,097	$590,345	$246,036	$312,866	53.0	127.0

TABLE 6.—1900.

STATISTICS OF SOCIETIES (CLASS B) WHOSE EXPENSES EXCEEDED 75 PER CENT OF CLAIMS PAID.

Names.	Number of Members.	Income.	Losses and Claims Paid.	Expenses.		
				Amounts.	Per Cent of Income.	Per Cent of Claims.
GROUP I.—MASSACHUSETTS.—LODGE SYSTEM.						
United States Indemnity Society	3,859	$46,753	$23,084	$24,504	52.5	106.0
Loyal Knights and Ladies	651	6,118	2,512	3,148	51.4	125.0
Sun Indemnity Assurance Society	2,919	35,777	9,618	25,448	71.1	265.0
Fidelity Benefit Association	2,347	36,319	8,721	25,116	69.1	288.0
Family Protective Union	1,437	12,662	2,675	9,121	72.0	341.0
Totals for Group I.	11,213	$137,629	$46,610	$87,337	63.5	187.0
GROUP II.—MASSACHUSETTS BRANCH SYSTEM.						
Masonic Casualty Co.	1,795	$21,841	$11,482	$10,630	48.6	92.6
Red Men's Fraternal Accident Association	961	11,666	4,659	5,260	45.0	113.0
Fraternal Accident Association of America	1,959	19,259	9,372	10,994	57.1	117.0
Ridgely Protective Association	14,519	164,578	64,282	79,892	48.5	124.0
Masonic Protective Association	6,407	68,558	25,600	34,337	50.1	134.0
Brotherhood Accident Co.	9,633	96,556	36,860	53,781	55.7	146.0
Totals for Group II.	35,274	$382,458	$152,255	$194,894	50.9	128.0
TOTALS FOR TWO GROUPS.						
Group I	11,213	$137,629	$46,610	$87,337	63.5	187.0
Group II	35,274	382,458	152,255	194,894	50.9	128.0
Aggregate	46,487	$520,087	$198,865	$282,231	54.2	142.0

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TABLE 6.— 1900.

STATISTICS OF SOCIETIES (CLASS B) WHOSE EXPENSES EXCEEDED 75 PER CENT OF CLAIMS PAID.

COMPARATIVE STATIST

	N		
	Domestic Corporations.		
	Class A.	Class B.	Totals
Number of Members	308,173	149,525	457,
Income	$9,576,403	$2,648,032	$12,224,
Losses and Claims	$8,916,709	$1,584,062	$10,500,
Expenses	$311,252	$887,981	$1,199,
Expenses Per Cent of Income	3.2	33.5	9
Expenses Per Cent of Losses	3.5	56.0	11

instance, a society paying $1,220 for claims spent $10,463, or 858 per cent for expenses!

An unpleasant story may be read in the figures of three societies, whose names appear in both tables among those most conspicuous for their inordinate rates of expenditure. At the end of 1899 these three had together 4,106 members, and collected during the year $33,562, of which only $6,586 were paid out for losses and claims. Yet the expenses of management absorbed $24,267, or *368 per cent of the amount of claims paid!* In 1900 they increased their members to a total of 6,703, and, with larger average assessments per member, their income was $51,196 greater than for the previous year. But as against an increase of $14,428 in the amount of claims paid, their expenditure was $35,518 greater! For the two years, therefore, these three societies collected $118,320, but paid only $27,600 for losses and claims at a cost of $84,052!

These figures speak for themselves, and further comment on them is superfluous.

As a conclusion to the statistical part of this paper, I present, in Table 7, a comparison of the fraternal insurance business in Massachusetts and New York for the year 1900. The New York Insurance Department gives a continuous list of all fraternal associations, without grouping them as is done in Massachusetts, but I have separated the domestic from the foreign societies, and have divided them, respectively, into Classes A and B.

It would be a mistake to push comparisons too far in this case, but the statistics bring out a few facts in clear enough relief.

The expenses of management show average percentages of income and of losses paid, which run singularly close together in the aggregate business of the two States.

Among the New York domestic corporations, as compared with the same category in Massachusetts, there is a much smaller proportion, as regards both membership and income, of societies whose expenses exceed 20 per cent of income (Class B). But I am disposed to doubt whether the much higher average percentages of income and losses paid, shown by the expenses of New York domestic corporations, give a just idea of their relative standing.

On the other hand, the foreign corporations doing business in New York, which come under Class B, have over eighteen times as many members (with incomes nearly in proportion) as the corresponding class in Massachusetts. How far this may be explained by differences in the text or in the administration of the laws of the two States I am not as yet informed.

To illustrate the ease with which the confidence of the poor may be abused under cover of the law of our own Commonwealth, I may quote a typical case among those which have come before me. One of these very societies with abnormal ratios of expenses to claim-payments had granted a certificate to a foreigner. The man understood little or no English, and very probably could neither read nor write, as he had "made his mark" before witnesses on his formal application for membership. He had been ill for some time, but, instead of receiving the $3 per week, which he had been led to expect under his certificate, he had been unable to get anything at all from the society, and was forced to apply elsewhere for assistance. Examination of his certificate showed me that the promise of indemnity was circumscribed by so many conditions as to be practically valueless to a working man. Indeed, it was plain that any one who wished his dues and assessments to yield some return to himself or his family would have to be exceedingly careful in the choice of his ailments or accidents, and finally of the very circumstances of his death! In this case, as I could not say that there had been any *legal* breach of contract by the society, I could only advise the man to drop his membership in it, and to consult some sensible person before joining another.

It is highly probable that not one man in ten reads, or understands if he does read, the complicated terms of the bargain which he has been persuaded to make by the agent of some such society. It is not until trouble comes that he or his family finds that there is no recourse against the cast-iron conditions of a contract, which, as the holders of the purse will surely plead, has been accepted by the expectant beneficiary with full knowledge of every clause.

Legislation cannot make men wise, and only common sense can save them from the folly of expecting to reap manifold benefits in time of trouble, in return for a few ridiculously small assessments. The problem is how to protect some of our poorer and more ignorant neighbors who are now preyed upon by sharpers in the guise of benefit associations, without making our laws more paternal than could be endured by a free people. It has been the purpose of these notes to prove how grave this problem has already become, by the evidence of official statistics which cannot be disputed, and to plead that the solution lies in a reasonable addition to the powers of the Insurance Commissioner.

In further support of this plea, I may bring together two facts already noticed — first, that our domestic associations are exempted from the strict methods of official inspection and control to which the law subjects all foreign fraternal societies; and second, that all of the societies named in my Tables 5 and 6, as using for current expenses undue percentages of their disbursements for losses and claims, are Massachusetts corporations.

Now a reference to Tables 3 and 4 will show that the average expenses of Massachusetts societies on the Lodge system, belonging to Class A, were only 3.2 per cent of income in 1899, and 3.3 per cent in 1900, as compared with 6.5 and 6.4 per cent, respectively, for foreign corporations on the same system. That is to say, the best class of our domestic associations in this group were twice as economical as their neighbors from other States. On the other hand, taking Class B of the same group, it appears that the Massachusetts societies averaged an expenditure of 33.9 per cent of income in 1899 and of 30.2 per cent in 1900, as against 25.8 and 22.3 per cent, respectively, for one foreign organization. Again, the Massachusetts corporations on the Branch system show average expenses equal to 49.2 per cent of income in 1899 and 46.5 per cent in 1900, or, roughly speaking, they cost twice as much to run as the only two foreign bodies which, during the period, are brought into Class B. But, as was noted, these two came just within the boundaries of what I have already admitted to be a somewhat arbitrary division, and a very slight change of figures would leave Class B entirely to home corporations. But, in any case, it must be acknowledged that if statistics can show anything, those here presented go far to prove that our laws already give the Insurance Commissioner a control over foreign corporations which prevents the unworthy from doing business among us; and that an extension of similar control to domestic societies would have the same effect in their case. In the face of such figures, the plain man may be pardoned for wondering why some of those Massachusetts corporations, which so unquestionably head the whole list, should not be more anxious to have the laws amended in this sense, if only for the protection of their own good name.

I have shown that, while the field occupied by unworthy friendly societies is relatively small, it is none the less broad enough to allow them to gather in many hundred thousands of dollars, taken from tens of thousands of poor people. Moreover, it seems more than probable that the few societies which went out of business during the two years reviewed were forced into receivers' hands more by their own inherent rottenness than through the compelling authority of laws, for all the vigilance of our excellent Insurance Department can do little as long as the Commissioner is left without practical initiative against unsound domestic organizations.

The reform so urgently needed would come most appropriately from within the body of the fraternal societies themselves, and would be accomplished with the least friction if started by the managers of those great associations to whose good work I have already borne ungrudging testimony. Is it possible that these gentlemen would turn a deaf ear to an earnest appeal for their co-operation in stopping this selfish and sordid robbery of the poor under cover of our insurance laws? I am unwilling to believe it. If, however, the evil be allowed to grow, as it must if unchecked, the day may come when public opinion will be aroused by some unusually flagrant case, and will solve the question for itself in a far more drastic form than will be needed if the matter be taken up by the fraternal societies themselves.

APPENDIX

TO

NOTES ON FRATERNAL BENEFICIARY CORPORATIONS.

GROUP I.—MASSACHUSETTS LODGE SYSTEM.

1899.

CLASS A.—EXPENSES LESS THAN 20 PER CENT OF INCOME.

Names.	Number of Members.	Income.	Losses and Claims Paid.	Expenses.		
				Amounts.	Per Cent of Income.	Per Cent of Losses.
American Benefit Society	5,512	$61,116	$38,000	$9,526	15.6	25.1
American Legion of Honor	16,894	1,588,274	1,663,500	69,601	4.4	4.2
Fraternal Helpers (American Order of)	2,556	31,359	29,233	4,883	15.5	16.7
Golden Rule Alliance	664	32,714	30,238	5,299	16.2	17.5
Harugari	2,021	20,723	18,000	1,264	6.1	7.0
Home Circle	5,816	171,428	159,249	15,682	9.1	9.8
New England Order of Protection	26,831	437,894	367,600	35,240	8.0	9.6
Pilgrim Fathers	23,831	525,814	488,250	22,170	4.2	4.5
Royal Arcanum	193,868	6,693,858	6,083,452	154,613	2.3	2.5
Totals for Class A	277,993	$9,563,180	$8,877,522	$318,278	3.3	3.6

CLASS B.—EXPENSES OVER 20 PER CENT OF INCOME.

Names.	Number of Members.	Income.	Losses and Claims Paid.	Expenses. Amounts.	Expenses. Per Cent of Income.	Expenses. Per Cent of Losses.
Colonial Life Association	1,501	$19,314	$4,200	$6,598	34.2	157.0
Druids (American Order of)	1,063	13,868	9,546	4,455	32.1	46.7
Family Protective Union	1,399	10,159	2,648	7,253	71.4	274 0
Fidelity Benefit Association	1,409	13,581	1,220	10,463	77.0	858.0
Foresters (Mass. Catholic Order of)	13,839	190,374	125,859	60,269	31.6	47.9
Loyal Knights and Ladies	580	5,773	2,985	2,850	49.4	95.5
Portuguese Fraternity of the U. S.	1,067	8,715	3,808	2,920	33.5	77.0
Sun Indemnity Assurance Society	1,298	9,822	2,718	6,551	66.6	241.0
Union Fraternal League	1,545	16,686	8,196	7,781	46.6	95.0
United States Indemnity Society	4,294	42,082	16,279	22,954	54.5	141.0
United Workmen	57,294	1,206,765	870,450	392,948	32.5	45.1
Workmen's Benefit Association	6,385	62,431	47,000	16,798	26.9	35.7
Totals for Class B	91,674	$1,599,570	$1,094,909	$541,840	33.9	49.5

GROUP I.—MASSACHUSETTS LODGE SYSTEM.

1900.

CLASS A.—EXPENSES LESS THAN 20 PER CENT OF INCOME.

Names.	Number of Members.	Income.	Losses and Claims Paid.	Expenses.		
				Amounts.	Per Cent of Income.	Per Cent of Losses.
American Benefit Society	4,544	$45,695	$49,000	$6,946	15.2	14.2
American Legion of Honor	11,160	1,245,744	1,185,500	43,708	3.5	3.7
Fraternal Helpers	2,071	29,599	23.828	3,349	11.3	14.0
Golden Star	3,188	14,758	11,500	1,304	8.8	11.3
Harugari	2,045	19,993	16,500	962	4.8	5.8
Home Circle	5,577	147,331	147,643	14,788	10.0	10.0
New England Order of Protection	29,125	445,025	439,000	37,075	8.3	8.4
North Eastern Indemnity Association	547	1,094	—	94	8.6	—
Pilgrim Fathers	22,311	474,794	471,500	21,261	4.5	4.5
Royal Arcanum	210,074	6,826,982	6,277,069	162,080	2.4	2.6
Totals for Class A	290,642	$9.251,015	$8,621,540	$291,567	3.2	3.4

CLASS B.—EXPENSES OVER 20 PER CENT OF INCOME.

Names.	Number of Members.	Income.	Losses and Claims Paid.	Amounts.	Per Cent of Income.	Per Cent of Losses.
Colonial Life Association	1,318	$59,057	$24,900	$15,636	26.5	62.8
Druids (American Order of)	864	15,057	8,824	5,335	35.4	60.5
Family Protective Union	1,437	12,662	2,675	9,121	72.0	341.0
Fidelity Benefit Association	2,347	36,319	8,721	25,116	69.1	288.0
Foresters (Mass. Catholic Order of)	14,943	239,707	151,732	65,570	27.3	43.2
Golden Rule Alliance	569	13,802	11,378	3,057	22.1	26.9
Loyal Knights and Ladies	651	6,118	2.512	3,148	51.4	125.0
Portuguese Fraternity of the United States	1,357	11,948	8,311	2,981	24.9	35.9
[1] St. Michael's Autonomic Benefit Association	760	6,128	3,128	2,115	34.5	67.6
[2] Sun Indemnity Assurance Society	2,919	35,777	9,618	25,448	71.1	265.0
Union Fraternal League	1,596	19,798	11,779	8,185	41.3	69.5
United States Indemnity Society	3,859	46,753	23,084	24,504	52.5	106.0
United Workmen	59,033	1,503,449	1,012,000	416,480	27.7	41.1
Workmen's Benefit Association	6,624	65,340	35,000	19,312	29.6	55.2
Totals for Class B	98,277	$2,071,915	$1,313,662	$626,008	30.2	47.6

Figures published corrected by the Insurance Department. [2] Passed into Receiver's hands March 22, 1901.

GROUP II. — MASSACHUSETTS.— BRANCH SYSTEM WITH RESTRICTED MEMBERSHIP.

1899.

CLASS B.—EXPENSES OVER 20 PER CENT OF INCOME.

Names.	Number of Members.	Income.	Losses and Claims Paid.	Expenses.		
				Amounts.	Per Cent of Income.	Per Cent of Losses.
Brotherhood Accident Co.	7,715	$71,802	$27,158	$40,000	55.7	147.0
Eagle Life Association	2,082	39,791	29,775	9,959	25.0	33.4
Fraternal Accident Association of America	1,897	23,748	18,808	5,449	22.9	28.9
Loyal Protective Association	7,142	81,016	43,708	33,066	40.8	75.0
Masonic Casualty Co.	1,726	22,975	10,337	9,051	39.4	88.0
Masonic Protective Association	6,331	75,201	25,965	41,878	55.7	161.0
Red Men's Fraternal Accident Association of America	985	11,806	6,381	4,946	41.9	78.0
Ridgely Protective Association.	16,258	182,768	81,188	106,317	58.2	131.0
[1] Wildey Casualty Co.	2,847	18,645	9,245	10,238	54.9	111 0
Totals for Class B	46,983	$527,752	$252,565	$260,904	49.4	103.0

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[1] Passed into Receiver's hands April 10, 1901.

GROUP II.—MASSACHUSETTS.—BRANCH SYSTEM WITH RESTRICTED MEMBERSHIP.

1900.

CLASS B.—EXPENSES OVER 20 PER CENT OF INCOME.

Names.	Number of Members.	Income.	Losses and Claims Paid	Expenses.		
				Amounts.	Per Cent of Income.	Per Cent of Losses.
Brotherhood Accident Co	9,633	$96,556	$36,860	$53,781	55.7	146.0
Eagle Life Association	2,004	38,720	30,505	10,203	26.4	33.4
Fraternal Accident Association of America	1,959	19,259	9,372	10,994	57.1	117.0
Loyal Protective Association	7,671	94,861	55,798	34,845	36.7	62.4
Masonic Casualty Co.	1,795	21,841	11,482	10,630	48.6	92.6
Masonic Protective Association	6,407	68,558	25,600	34,337	50.1	134.0
Red Men's Fraternal Association of America	961	11,666	4,659	5,260	45.0	113.0
Ridgely Protective Association	14,519	164,578	64,282	79,892	48.5	124.0
Totals for Class B	44,949	$516,039	$238,558	$239,942	46.5	100.0

GROUP III.—MASSACHUSETTS.—MISCELLANEOUS.

1899.

CLASS A.—EXPENSES LESS THAN 20 PER CENT OF INCOME.

Names.	Number of Members.	Income.	Losses and Claims Paid.	Expenses.		
				Amounts.	Per Cent of Income.	Per Cent of Losses.
American Express Employers' Aid Society	832	$8,864	$9,856	$312	3.5	3.2
Boston & Maine R. R. Relief Association . . .	1,550	25,008	18,416	703	2.8	3.8
Boston Firemen's Mutual Relief Association . . .	973	30,833	26,378	373	1.2	1.4
Boston Teachers' Mutual Benefit Association . . .	923	12,568	8,009	2,142	17.0	26.7
Commercial Travellers' Association of New England .	820	26,587	26,748	2,165	8.1	8.1
Hibernians' Widows' and Orphans' Fund . . .	1,431	16,276	13,000	1,952	12.0	15.0
Masonic Mutual Relief Association of Central Massachusetts	1,099	31,583	29,788	1,587	5.0	5.3
Methodist Ministers' Relief Association	1,652	47,923	48,000	2,637	5.5	5.5
Metropolitan Mutual Aid Association	1,554	22,162	18,898	2,437	11.0	13.0
N. Y., N. H. & H. R. R. Beneficial Association . .	1,286	21,203	19,860	1,384	6.5	7.0
Odd Fellows Mutual Relief Association of Worcester Co. .	659	15,210	14,023	1,736	11.4	12.4
Odd Ladies Relief Fund Association	2,060	20,473	20,550	1,188	5.8	5.8
South Massachusetts Masonic Mutual Relief Association .	636	19,084	12,343	572	5.1	4.6
Teachers' Annuity Guild	1,213	13,310	9,910	789	5.9	7.9
Winchester Mutual Benefit Association	547	3,602	3,334	280	7.7	8.4
Total for Class A	17,235	$306,686	$279,113	$20,257	6.6	7.3

CLASS B.—EXPENSES OVER 20 PER CENT OF INCOME.

Names.	Number of Members.	Income.	Losses and Claims Paid.	Amounts.	Per Cent of Income.	Per Cent of Losses.
Commercial Travellers' Eastern Accident Association .	3,963	$31,743	$19,952	$11,302	35.5	56.6
St. Jean Baptiste Society of North Adams . . .	637	9,898	4,798	4,411	44.6	92.0
St. John Baptist Mutual Benefit Association of Salem .	516	4,878	2,446	1,490	30.5	61.0
Totals for Class B	5,116	$46,519	$27,196	$17,203	37.0	63.2

GROUP III.—MASSACHUSETTS—MISCELLANEOUS.

1900.

CLASS A.—EXPENSES LESS THAN 20 PER CENT OF INCOME.

Names.	Number of Members.	Income.	Losses and Claims Paid.	Expenses.		
				Amounts.	Per Cent of Income.	Per Cent of Losses.
American Express Employers Aid Association	848	$5,632	$4,365	$330	5.8	7.5
Boston & Maine R. R. Relief Association	1,715	23,162	23,201	904	3.9	3.9
Boston Firemen's Mutual Relief Association	975	27,571	26,818	270	0.98	1.0
Boston Letter Carriers Mutual Benevolent Association	535	10,271	9,323	813	7.9	8.7
Commercial Travellers Association of New England	792	25,513	22,702	2,188	8.6	9.6
Hibernian Widows and Orphans Fund	1,426	19,276	18,998	1,769	9.2	9.3
Masonic Mutual Relief Association of Central Massachusetts	892	24,818	25,000	1,745	7.0	7.0
Methodist Ministers Relief Association	1,648	52,437	47,000	2,032	3.9	4.3
Metropolitan Mutual Aid Association	1,890	23,861	20,944	2,920	12.2	14.0
N. Y., N. H. & H. R. R. Beneficial Association	1,336	21,952	18,994	1,365	6.2	7.2
Odd Fellows Mutual Relief Association of Worcester Co.	551	15,256	13,232	1,219	7.9	9.2
Odd Ladies Relief Fund Association	1,993	40,131	36,565	1,465	3.6	4.0
Southern Massachusetts Masonic Mutual Relief Association	600	13,264	11,071	588	4.4	5.3
St. John Baptist Mutual Benevolent Association of Salem	598	4,947	2,536	847	17.1	33.4
Teachers Annuity Guild	1,196	12,578	10,068	814	6.4	8.1
Winchester Mutual Benefit Association	536	4,719	4,352	416	8.8	9.5
Totals for Class A	17,531	$325,388	$295,169	$19,685	6.1	6.6

CLASS B.—EXPENSES OVER 20 PER CENT OF INCOME.

Names.	Number of Members.	Income.	Losses and Claims Paid.	Amounts.	Per Cent of Income.	Per Cent of Losses.
Boston Teachers Mutual Benefit Association	892	$13,232	$11,748	$3,058	23.1	26.0
[1] Catholic Association (Corporation of members of)	541	2,726	1,254	2,133	78.2	170.0
Commercial Travellers Eastern Accident Association	4,188	36,864	16,073	12,987	35.2	80.8
St. Jean Baptiste Society of North Adams	678	7,256	2,767	3,853	53.1	139.0
Totals for Class B	6,299	$60,078	$31,842	$22,031	36.7	69.2

[1] First year of organization.

GROUP IV.—OTHER STATES.—LODGE SYSTEM.

1899.

CLASS A.—EXPENSES LESS THAN 20 PER CENT OF INCOME.

Names.	Number of Members.	Income.	Losses & Claims Paid.	Expenses.		
				Amounts.	Per Cent of Income.	Per Cent of Losses.
Ahawas Israel	8,506	$33,742	$25,500	$4,489	13.3	17.6
Brith Abraham	41,427	127,918	101,365	11,507	9.0	11.3
Catholic Benevolent Legion	45,952	1,263,460	1,148,175	36,361	2.9	3.2
Catholic Knights of America	22,647	824,221	764,533	33,180	4.0	4.3
Golden Cross (United Order of)	32,180	620,584	581,020	46,184	7.4	7.9
Good Fellows	9,478	358,380	334,899	21,703	6.1	6.5
[1] Heptasophs	52,830	923,392	758,459	167,290	18.1	22.0
Knights and Ladies of Honor	51,799	1,345,684	1,272,750	76,733	5.7	6.0
Knights of Columbus	26,336	322,760	180,000	45,374	14.1	25.2
Knights of Honor	66,863	3,619,561	3,515,033	97.120	2.7	2.8
Knights of Pythias	60,522	1,352,695	1,218,784	141,754	10.4	11.6
Ladies Catholic Benevolent Association	49,188	343,661	297,500	38,509	11.2	13.0
Loyal Additional Benefit Association	5,429	117,332	101,250	8,509	7.2	8.4
Scottish Clans of Missouri	5,328	65,580	59,500	8,173	12.5	13.7
Totals for Class A	478,485	$11,318,970	$10,358,768	$736,886	6.5	7.1
CLASS B.—EXPENSES OVER 20 PER CENT OF INCOME.						
[2] Sons of Abraham	3,706	$12,833	$9,300	$3,315	25.8	35.6
Totals for Class B	3,706	$12,833	$9,300	$3,315	25.8	35.6

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[1] Heptasophs — corrected from figures in Table 2 where fees retained by subordinate bodies are charged to "Losses and Claims" instead of to "Other Expenses."

[2] Ceased business October 16, 1900.

GROUP IV.—OTHER STATES.—LODGE SYSTEM.

1900.

CLASS A.—EXPENSES LESS THAN 20 PER CENT OF INCOME.

Names.	Number of Members.	Income.	Losses and Claims Paid.	Expenses.		
				Amounts.	Per Cent of Income.	Per Cent of Losses.
Ahawas Israel	12,254	$47,424	$37,000	$7,922	16.7	21.4
Brith Abraham	48,391	167,421	135,925	8,591	5.1	6.3
Catholic Benevolent Legion	41,984	1,334,149	1,200,165	33,933	2.5	2.8
Catholic Knights of America	23,086	807,633	730,227	26,616	3.3	3.6
Catholic Mutual Benefit Association	51,416	1,017,678	892,600	14,349	1.4	1.6
[1] Foresters (Catholic Order of)	87,531	815,678	655,000	70,205	8.6	10.7
Golden Cross	25,538	644,827	527,790	46,733	7.2	8.8
Good Fellows	8,342	374,915	355,731	22,437	6.0	6.3
Heptasophs	55,102	1,150,108	995,611	146,838	12.8	14.7
Knights and Ladies of Honor	49,785	1,371,372	1,267,674	123,846	9.0	9.8
Knights of Columbus	39,436	386,761	183,800	55,696	14.4	30.3
Knights of Honor	59,932	3,554,073	3,433,877	107,748	3.0	3.1
Knights of Pythias (Endowment)	66,561	1,527,321	1,334,091	168,836	11.0	12.6
Ladies Catholic Benevolent Association	57,169	413,661	338,717	38,128	9.2	11.3
Loyal Additional Benefit Association	5,883	120,926	82,928	9,111	7.5	11.0
Scottish Clans of Missouri	6,061	65,959	48,000	7,533	11.4	15.6
Workmen's Sick and Death Benefit Fund	25,739	260,883	233,366	9,084	3.5	3.9
Totals for Class A	655,210	$14,060,789	$12,452,502	$897,606	6.4	7.2

CLASS B.—EXPENSES OVER 20 PER CENT OF INCOME.

Artisans Canadiens Francais	14,846	$240,140	$164,478	$53,653	22.3	32.6
Totals for Class B	14,846	$240,140	$164,478	$53,653	22.3	32.6

[1] NOTE.—The accounts of this Society for the year 1899 were not published by the Insurance Commissioner for reasons given in his report (page 468).

REVIEWS AND MISCELLANY.

NOTES ON THE CENSUS.

The following notes have been prepared in the Division of Methods and Results of the Census Office and given to the press by the Director of the Census. With his consent they are reprinted, the proof having been read in the Census Office as a guarantee of accuracy.

Total Population of the United States, June 1, 1900.

The United States now includes along with the main part, or continental United States, certain outlaying districts, namely, Alaska and the recent insular accessions, Hawaii, Porto Rico, the Philippine Islands, Guam, and American Samoa. The Twelfth Census extended over only two of these outlying districts, Alaska and Hawaii, but the Census Office has obtained the best available information regarding the population of the other portions of the United States and prepared the following table showing the present population of the entire United States.

	Population.
Continental United States	75,994,575
Philippine Islands	6,961,339
Porto Rico	953,243
Hawaii	154,001
Alaska	63,592
Guam	9,000
American Samoa	6,100
Persons in military and naval service outside continental United States	91,219
United States	84,233,069

The estimate for the Philippine Islands is made by the statistician to the Philippine Commission in a letter to the Census Office. A census of the Philippine Islands was in progress in 1896 when the insurrection broke out and returns for two-fifths of the population were found stored in Manila. These were carefully tabulated and the foregoing estimate is based upon the results. The figure for Porto Rico is from the Census of 1899 taken by the War Department in consultation with the Census Office. The figures for

Hawaii and Alaska and for persons abroad in the military and naval service are from the results of the Twelfth Census. The figure for Guam is an estimate made in a report of the War Department and that for American Samoa an estimate reported to the Census Office by the Acting Secretary of the Navy.

The total population of the United States at the close of the nineteenth century was about eighty-four and a quarter million. As the population of the United States at the beginning of the century was about five and a third million, the nation has grown nearly sixteen fold in one hundred years.

There are but three countries which now have a greater population than the United States, namely, China, the British Empire and the Russian Empire. China and the British Empire have each of them probably between 350,000,000 and 400,000,000, or together nearly one-half of the total population of the earth. The Russian Empire with about 131,000,000 people has more than half as many again as the United States, and has been increasing during the century just closed with greater rapidity than any other European power. Its growth, like that of the United States, has been partly through the natural increase of its population and partly through great accessions of territory. It had about 38,800,000 people in 1800 and has increased nearly three and a half times during the nineteenth century. France, including its dependencies, is the fifth country of the world in order of population and has about eighty-three and two-thirds million people, or almost the same number as the United States. Of these over 25 million are in African dependencies, nearly 17 million in Asia, and 2 million in Madagascar. These five most populous countries together include over two-thirds of the estimated population of the world, which is placed by the best authorities at between 1,500,000,000 and 1,600,000,000.

Growth by Sections.

The United States, excluding Alaska and the recent insular accessions, may be divided into three main geographical areas, the West, the North and the South. The Western division as recognized by the Census Office extends from the Pacific to the eastern boundary of Montana, Wyoming, Colorado and New Mexico. The line separating the North and the South is the Potomac and Ohio rivers and the southern boundaries of Missouri and Kansas.

The per cent of increase of population in each of these areas has been computed by the Census Office for each ten-year period in the nineteenth century and a summary of the results is given below. A twenty-year interval has been used to make the table shorter and to avoid using the figures for 1870 when the census in the southern states was somewhat incomplete. The western division does not appear in the census tables until 1850, and it was not until 1860 that more than half a million people were living there.

PER CENT OF INCREASE OF POPULATION DURING TWENTY-YEAR PERIODS OF THE NINETEENTH CENTURY.

Years.	In the North.	In the South.	In the West.
1800–1820	94.1	68.5	.....
1820–1840	93.9	57.3	.....
1840–1860	94.7	60.2	.....
1860–1880	61.9	48.4	185.6
1880–1900	48.7	48.5	131.5

The table shows that prior to the Civil War the northern States nearly doubled in population with each twenty years, while in the southern States the increase of population was only about two-thirds as great. Since 1860 the rate of growth in both parts of the country has been much less, but while the rate of growth in the North has steadily decreased, that in the South during the last twenty years has been slightly greater than during the twenty years from 1860 to 1880. During the last twenty years there has been no substantial difference in the rate of growth of the two sections.

In the following table the per cent of growth of these regions during each of the last two ten-year periods is given.

PER CENT OF INCREASE OF POPULATION DURING THE LAST TWO DECADES.

Years.	In the North.	In the South.	In the West.
1880–1890	24.8	20.1	71.3
1890–1900	19.0	22.4	31.9

These figures show that during the last ten years there was a rapid decrease in the rate of growth of population in the West, a less marked but decided decrease in the rate of growth in the North, and a slight increase in the rate of growth in the South. For the first time in our national history the population of the South has increased somewhat more rapidly than that of the North. The rate of growth in the three divisions is far more nearly the same than it ever has been.

But if the comparison is limited to the States east of the Mississippi River, classing Minnesota and Louisiana with the Western States, the result is slightly different.

PER CENT OF INCREASE OF POPULATION EAST OF THE MISSISSIPPI DURING THE LAST TWO DECADES.

Years.	In the North.	In the South.
1850–1860	33.2	16.7
....	....	....
1880–1890	20.1	16.0
1890–1900	19.9	17.7

When the trans-Mississippi States are omitted, the rate of growth in the North is slightly greater than that in the South, but the present difference between the two sections in this respect is about half what it was between 1880 and 1890 and less than one-seventh of what it was between 1850 and 1860.

The frontier as a large area of rapid but intermittent growth is no longer an important factor in the progress of American population and the rate of growth in the several great areas of the United States is now nearly the same.

Population in Cities.

It was recently shown from the figures of the Twelfth Census that for the first time in our national history the South is growing in population as rapidly as the North. It is not clear at first how this deduction from the figures is to be harmonized with the well known facts that in the North the proportion of inhabitants living in cities is much larger than it is in the South, and that as a rule cities increase in population much more rapidly than country districts.

The proportion of inhabitants of the three sections living in large cities appears from the following figures:

	Total Population.	Population Living in Cities of 25,000 Inhabitants or more.	Per Cent of Total Population.
The North	47,379,699	16,196,580	34.2
The South	24,523,527	2,488,553	10.1
The West	4,091,349	1,033,179	25.3
Continental United States	75,994,575	19,718,312	25.9

In the North the proportion of the population living in large cities is more than three times as great as it is in the South. The population living in cities of over 25,000 inhabitants increased 41.0 per cent between 1890 and 1900, partly by the growth of the 124 cities of that size in 1890 and partly by the addition during the following ten years of 36 other cities to the list. The population of the country outside these cities increased between 1890 and 1900, 14.9 per cent.

A comparison in which the same cities are included at each decade is more significant, although even this takes no account of the annexation of suburbs by some of these cities between 1890 and 1900. The 160 cities of continental United States, each of which had over 25,000 inhabitants in 1900, increased in population 32.5 per cent between 1890 and 1900; the rest of the United States, excluding Alaska and the recent insular accessions, increased 17.1 per cent. That is, the large cities are growing with almost double the rapidity of the rest of the country.

That the per cent of the population of northern states living in large cities is nearly three times as great as the corresponding per cent in the South; that large cities taken collectively are growing nearly twice as fast as the rest of the country; and yet that the North has a rate of increase no greater than that of the South seems anomalous and almost paradoxical.

The following figures show that the apparent contradiction is not a real one. The population of the three great sections of the country, the North, the South, and the West, has been divided into five groups based upon the number of inhabitants in the city or town and the per cent of increase of population in each group between 1890 and 1900 computed. These five groups do not contain the same places at the two censuses, many towns and cities rising during the ten years from one to another and swelling the apparent rate of growth of the group entered.

Population Limits.	Per Cent of Increase of Population Living in Places of Size Indicated, 1890 to 1900.			
	In the North.	In the South.	In the West.	In Continental United States.
25,000 and over	42.2	31.0	47.3	41.0
8,000 to 25,000..	22.7	26.9	17.9	23.1
4,000 to 8,000...	27.6	87.3	50.7	36.7
Semi-urban *...	27.9	44.4	46.5	33.0
Rural	1.2	17.9	22.0	9.4

* By semi-urban is meant an incorporated place with less than 4,000 inhabitants.

This table shows that the large cities in the North are growing much faster than those of the same size in the South, but that this difference is balanced by an extremely rapid growth of small towns and cities in the South and especially by the high rate of increase of southern rural population.

How far the slight growth of rural population in the North as a whole is influenced by the transfer of places classed as rural in 1890 to higher classes in 1900 cannot be told from these figures. They do show that the present growth of population is a resultant in the North of a very rapid growth of large cities, a slower growth of small cities, and a very slight growth in the country; and a resultant in the South of a rate of growth of large cities below the average for the country, balanced by a striking growth of small cities and an increase of rural population twice as fast as the average for the United States.

Growth East and West.

In a recent memorandum from the Census Office it was shown that the rates of growth in the South and in the North are now nearly the same. The following figures will show that the rates of growth of the country east and west of the Mississippi, classing Minnesota and Louisiana with the Western group, are also not very far from the same. In preparing the table Alaska and the recent insular accessions have been disregarded, and for brevity's sake a twenty-year period has been used.

Per Cent of Increase of Population.

Period.	East of the Mississippi River.	West of the Mississippi River.
1800–1820	77.1	.....
1820–1840	72.2	275.1
1840–1860	66.2	417.4
1860–1880	44.6	148.2
1880–1900	41.5	86.3

The table shows that east of the Mississippi River there has been a steady decline in the rate of growth with each twenty-year period, a decline that was most marked during the score of years from 1860 to 1880, as compared with the preceding period. In 1820 the total population west of the Mississippi was less than a quarter of a million (233,735), in 1840 less than a million (876,799). The most rapid growth in the Western region was during the twenty years immediately preceding the Civil War, when the population increased more than five-fold, reaching in 1860 over 4 1–2 million. Its rate of growth during the next twenty years was not much more than one-third the rate between 1840 and 1860, and its rate during the twenty years just ended was far less than during the preceding period. Between 1840 and 1860 the average rate of growth west of the Mississippi was more than six times that east of the great river, but during the last period the Western rate was but little more than double the Eastern rate. The following figures give the rates of increase for the last two ten-year periods.

Per Cent of Increase of Population.

Period.	East of the Mississippi River.	West of the Mississippi River.
1880–1890	18.7	49.0
1890–1900	19.2	25.0

These figures show that during the last twenty years the rate of increase west of the Mississippi declined sharply, while east of the Mississippi there was a slight increase in the rate of growth. The difference between the two sections for the last ten years was less than one-fourth of the difference between 1880 and 1890. These figures, like those for the North and the South previously published, show that a process of equalization in the rate of growth in different parts of the country is now in rapid progress.

The increase of population in the states east of the Mississippi River was 18.7 between 1880 and 1890, and 19.2 between 1890 and 1900. In the same area the increase in urban population, meaning thereby all places of more than 4000 inhabitants, was 53.1 per cent between 1880 and 1890, and only 37.2 per cent between 1890 and 1900. Both of these statements could not be true unless the population of places having less than 4000 inhabitants had been growing more rapidly in the last ten years than in the preceding decade. Such is the fact. Between 1880 and 1890 the population east of the Mississippi, excluding places of more than 4000, increased 4.9 per cent; but between 1890 and 1900, 8.7 per cent.

To throw further light upon this increased prosperity of the small towns and country districts during the last ten years, a study has been made by the Census Office of those counties which actually decreased in population at either decade, after making allowance for changes in county boundaries. Counties of this class are predominantly agricultural and usually have lost, through migration to more favored localities, the natural increase of their population by excess of births over deaths. Between 1880 and 1890 the counties east of the Mississippi which lost population extended over an area of 151,202 square miles, or nearly as great as New England, New York and Pennsylvania. This was about one-sixth (17.7 per cent) of the total area east of the Mississippi River. Between 1890 and 1900 the counties east of the Mississippi River which lost population extended over an area of 90,218 square miles. This is only about one-tenth (10.6 per cent) of the total area east of the Mississippi. The figures show that in this part of the country an area almost equal to that of New England lost population between 1880 and 1890, but gained between 1890 and 1900.

West of the Mississippi the changes were in the reverse direction, that is, the area losing population was slightly larger between 1890 and 1900 than it was between 1880 and 1890 (234,862 square miles as compared with 206,958 square miles). But in the country as a whole the area of counties losing population was over 30,000 square miles less in the last decade than it was between 1880 and 1890. In the North Atlantic group the per cent of area losing population between 1880 and 1890 was 26.8; between 1890 and

1900, 21.9. The correponding figures for the other groups were South Atlantic, 1880–1890, 11.6 per cent; 1890–1900, 6.3 per cent; North Central, 1880–1890, 12.1 per cent; 1890–1900, 19.1 per cent; South Central, 1880–1890, 6.7 per cent; 1890–1900, 4.6 per cent; Western Division, 1880–1890, 12.9 per cent; 1890–1900, 8.6 per cent. These figures show that in four of the five divisions, all except the North Central, the increase of population was more widespread and general in the last decade than it was between 1880 and 1890. If the North Central division be divided into two parts at the Mississippi River, the per cent of area in the eastern part showing a loss of population fell from 20.9 in the earlier to 12.1 in the later decade. On the contrary, in the Western North Central the per cent rose from 7.9 in the earlier to 22.5 in the later decade. Further analysis shows that a gain of population in the last decade was reported from every county of Minnesota and North Dakota and every county but one of Iowa. In South Dakota, Nebraska, and Kansas, on the contrary, there were large areas, mostly in the western parts and sparsely settled, for which a decrease of population was reported. The tide of migration in 1890 had pushed up the slopes of the Great Plains farther than conditions warranted, and in the last decade the wave has been receding, depleting these areas and filling up the rural counties of such states as Iowa and Illinois. In Iowa the per cent of area losing population fell from 27.0 between 1880 and 1890 to 1.6 between 1890 and 1900. In Illinois it fell from 28.6 to 4.6. In other words, over about a quarter of each state the population decreased between 1880 and 1890 only to increase in the last ten years. In no other important states has there been so marked a change.

Migration Westward.

No feature in the history of American population during the nineteenth century has been more conspicuous than the tide of migration pushing westward from the Atlantic Coast toward the Pacific. There is no statistical information by which this current can be accurately measured, but important indications regarding its magnitude can be derived from comparing the state of birth with the state of residence, as reported to the Census Office. To get a summary view of the results the states and territories may be divided into those of the Atlantic Coast, including Vermont, Pennsylvania, the District of Columbia, and West Virginia, along with those that touch the ocean from Maine to Florida; the Central states, including all between the Atlantic Coast states and the eastern boundary of Montana, Wyoming, Colorado and New Mexico; and the Western states, extending from this line to the Pacific. The natives of the Atlantic Coast states living in the Central group were in 1880 not far from 3 million (2,890,938); in 1890 they were about 2 2-3 million (2,649,830); in 1900 they were less than 2 1-2 million (2,408,627). In the last 20 years the natives of the Atlantic Coast states living in the Central states have decreased by nearly half a million (482,311). While the number of easterners in the Central states has been declining the total population of the Central states has been rapidly increasing. In 1880, 11.0 per cent of the total population of the Central states were born in the Atlantic states; in 1890, 7.9 per cent; in 1900, 6.0 per cent.

The natives of the Atlantic Coast states living in the Western division were 238,165 in 1880; 362,097 in 1890; and 387,815 in 1900. This current of migration is still increasing, but the amount of increase in the last ten years was much less than in the period from 1880 to 1890. Although it has grown, the total population of the Western division has grown more rapidly, so that the residents of the Western division born in the Atlantic states were in 1880 13.5 per cent; in 1890, 11.7 per cent; and in 1900 only 9.5 per cent of the total population.

Those born in the Central states and living in the Western were in 1880, 309,193; in 1890, 703,564; in 1900, 981,142. This class constituted in 1880, 17.5 per cent; in 1890, 22.7 per cent; and in 1900, 24.0 per cent of the total population of the Western division. This current of migration, therefore, is growing both absolutely and relatively to the total population.

The foregoing figures show that migration from the Atlantic to the Central states is decreasing absolutely and relatively; migration from the Atlantic states to the Western states is increasing absolutely, but decreasing relatively; and migration from the Central to the Western states is increasing both absolutely and relatively.

Migration, North or South.

In the Census Office figures have been computed showing the migration from the northern states to the South and from the southern states to the North, so far as it is measured by a comparison between the state of birth and the state of residence, the only available statistical measure. This migration may be divided into three classes: the migration northward of white persons born in the southern states; the migration northward of colored persons, practically all being negroes, born in the southern states; and the migration southward of persons born in the northern states. The number of colored persons born in the northern states is too small for the migration southward of this class to be important.

In 1890 there were in the northern states, meaning thereby all north of Mason and Dixon's line, the Ohio and the southern boundary of Missouri and Kansas, 904,689 white persons who had been born in the South. In 1900 the number had increased to 958,974, or 6.0 per cent. But in the meantime the number of white persons of southern birth living in continental United States had increased from 12,921,995 to 16,055,045. The proportion of white persons of southern birth and northern residence fell in the ten years from 7.0 to 6.0 per cent of the whole class of white persons born in the South.

In 1890 230,931 colored persons who had been born in the South were living in the North. In 1900 their number was 336,879, an increase of 45.9 per cent. Meantime the number of colored persons born in the South and living in continental United States had increased from 6,915,715 to 8,287,081. The proportion of colored persons of southern birth and northern residence increased in the ten years from 3.3 to 4.1 per cent of the whole class of colored persons born in the South.

These figures show that the migration northward of southern whites, while increasing in absolute amount, has relatively declined. The migration northward of colored persons has increased rapidly. The northward migration of southern whites, however, is still nearly three times as great in absolute amount, and nearly one and a half times as great relative to the population from which it comes, as the northward migration of the colored, a difference probably due in part to the better economic position of the southern whites, and in part to the fact that the centre of population of that class is nearer the border.

In 1890 there were 635,594 persons living in the South who had been born in the North. In 1900 the number had increased to 1,021,450, or 60.7 per cent. This current of migration is greater in absolute amount than that of southern whites or southern negroes moving North, but over a quarter of a million less than the two combined. It is increasing much more rapidly than either. But the total number of persons of northern birth in continental United States is so great (in 1890, 31,933,974; and in 1900, 39,125,506) that the amount of this southward movement relative to the population from which it comes is less than the proportion for either of the return currents. In 1890 of all persons in continental United States born in the North 2.0 per cent were living in the South. In 1900 the proportion had increased to 2.6 per cent.

Estimates of Population.

The published results of the Twelfth Census giving the population of the United States have been generally accepted as trustworthy and correct. But in a few cities the officials or the press, dissatisfied that the count fell short of their expectations and predictions, have challenged its accuracy. These criticisms have usually been made in good faith and wherever sufficient evidence in support of them has been offered they have been carefully investigated by the Census Office. For the most part they have rested upon a discrepancy between the census figures and a directory estimate, the vote cast at a recent election, the city's prior rate of growth or the number of children of school age reported by a state school census. In considering the weight to which such objections are entitled the Census Office has examined thoroughly the average accuracy of such estimates with results stated in a census bulletin which has just appeared.

The study has been confined for the most part to the 78 cities having at least 50,000 inhabitants. It shows that in half of these cities the per cent of increase of population, 1890–1900, was not within 18 of the per cent in the same city, 1880–1890, a result due mainly to the sharp check in the rate of growth of large cities during the last ten years. The per cent of increase for all these cities taken collectively, 1880–1890, was 46.8; and 1890–1900 it was 32.5. This shows the impossibility of estimating the population of a city under existing conditions from its rate of growth between the two preceding censuses.

The path usually followed in estimating the population of a city is that taken by the city directory which often prints its guess in the prefatory note. These guesses have been compared with the results of the census and in every case but one in 1890 or 1900 the directory estimate was found too large. In two-thirds of the cases the directory was over 10 per cent and in nearly one-third it was over 20 per cent in excess of the census count. Probably directory publishers as a class tend to include year by year a larger proportion of the city's population. Probably also a larger proportion of the city's business population is coming to reside in suburbs and thus a directory count of the business population is becoming a less accurate index of the resident population reported by the census.

As a basis for estimating the population of a city the vote cast is little, if any, better than the directory count. In Albany, Columbus and Dayton, there were less than four persons to a vote at the last presidential election ; in Fall River there were more than 9 persons to each vote and in Atlanta more than 17.

The school census if accurate is better than any of the other three methods examined. But it is so frequently inaccurate that the method can seldom if ever be used with confidence.

It is now recognized that counting is more accurate than guessing, and for that reason it has supplanted the simple and cheaper method in almost universal use a century ago. The first step away from simple guessing was to count some unit such as inhabited houses, deaths, births, school children, or votes, and on this platform to hazard a guess. This was a long step in advance of simple guessing, but is not to be compared for accuracy with a thorough count. To challenge a census with estimates is like trying to appeal from a higher to a lower court. Persons wishing to see in more detail the evidence on which the foregoing statements rest are referred to Census Bulletin No. 135.

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THE PRESERVATION OF THE PRINTED RECORDS BY THE NATION.

In the *Report of the Librarian of Congress for the fiscal year ending June 30, 1901*, two subjects are of especial interest. First, the official announcement to the public, which has previously been made by circular letters and through the professional periodicals to librarians and others, that the bibliographical dream of generations has come true,— that the national library is prepared to furnish at cost for all currently copyrighted books received by it, and others at as fast as catalogued, printed catalogue cards, not only to other libraries, but also to private individuals, who have the privilege of selecting titles and purchasing only such cards as are desired. Second, the account of the Division of Documents, of which Dr. Roland P. Falkner is chief, which shows that this division is to be administered in much the same spirit as the Department of Documents and Statistics of the Boston Public Library, which possesses the collection of the American Statistical Association, in that the Division of Documents is to have supervision of the works on economics, politics and sociology in general in the Library of Congress, as well as of the publications of the various national and state governments and municipal and other corporations. Some interesting tables show that the library contain about 20,000 American government documents, state and national, and about 40,000 foreign, besides 25,060 classified in the various chapters of the library. It is reported that, as was the case with the statistical collection in Boston, serious deficiencies are found as the result of the absence in the past of sufficiently persistent solicitations for publications which thus only can be procured. Government documents are now regularly exchanged with forty-seven foreign countries, of which a list is given is one of the appendices. It surprises one to read, however, that "no attempt is being made to secure complete files of all the documents of all the states" of the United States. It is to be deeply regretted, too, that not even in the national library is there to be found a complete file of the government publications of the United States. Let us hope that it will in time prove possible to gather an approximately complete collection, and let us be thankful that Congress is beginning to appreciate the value of its library to the country and is making some approach to adequate provision for its needs, so that future generations will be better provided with materials for their study of history and of society than is our own.

L. P. L.

MUNICIPAL STATISTICAL BULLETINS.

The appendix articles of the *Bulletin* of the Boston Statistics Department for the year of 1901 (Vol. III, Nos. 1 to 12) are as follows: No. 1, *Registration and Actual Vote, by Precincts, of*

Women Voters for Boston School Committee, 1899. These tables show (a) the distribution of women voters, (b) the number of women registered, number who voted, and per cent who voted for School Committee, in wards which gave the Democratic candidate for Mayor a majority in 1899, (c) the same in wards of corresponding Republican predominance. No. 2, no appendix. No. 3, *Boston Elections in 1900.* Six tables show the actual, possible, and per cent of actual to possible vote, by wards; Votes cast for principle officers in Municipal and State elections; Presidential vote in Boston from 1876 to 1900; Per cent of actual to possible vote, 1860–1900, for President, Congressmen, Governor aud Mayor. Nos. 4 and 5, *General Ward Statistics, relating to Area, Population, Voters, Valuation and Taxes, in 1900;* five tables give statistics in general detail for each of these captions. No. 6, *Tax Rate, Valuation, and Indebtedness of Massachusetts Cities, 1900.* The table is supplemented by tabulated statements of the relative rank of the cities and their change from 1899. No 7, *Distribution of Population of Boston by Wards, 1900, according to Sex, Nativity, and Parent Nativity;* two tables are presented. No. 8, *Distribution of Population of Boston by Wards, 1900, showing Color, Nativity, Sex, and School, Military, and Voting Ages;* two tables are presented, the divisions of sex and nativity being shown in a different classification from that employed in the previous number. No. 9, *Persons engaged in Medicine in Boston, 1895;* the persons in the various classes of medicinal practice are shown in total and for the 13 local subdivisions of the city. No. 10, *Woman Suffrage in Massachusetts, 1890–1900.* Comparative tables show the female vote in the State, in all cities, in all towns, in each of the five principle cities, and in Boston; minor tables show the number of women who registered, and the number and per cent who voted, in Boston, from 1879 to 1900, and also the registration and vote for School Committee and on Referenda for each city of the State. No. 11, *Boston School Census, 1901.* Two tables show by wards the Census and the Distribution and Movement of the School Population. No. 12, *Summary Tables for 1901* and *Foreign-born Population in Massachusetts Cities of 25,000 Inhabitants, 1900.* The tables, on the latter study, give timely and striking comparisons, calculated from tables in Volume I of the 1900 Census.

The Chicago Municipal Library and Bureau of Statistics has inaugurated a bi-monthly bulletin containing statistical information of the city of Chicago. The first number of Volume I appears for the first three months of the year 1901. The publication, which is prepared on the same general lines as is the *Bulletin* of the Statistics Department of Boston, presents a number of tables on each of four divisions of the municipal life: Municipal Administration, Public Health, Education, and Commerce and Traffic. The division of "Education," including (in numbers 1 to 4) data for public schools and libraries, is intended to contain as soon as possible similar information of private educational institutions. For the field of "Commerce and Traffic," only general tables can be given: Clearing House Statistics, Imports and Internal Revenue Collections, Arrival and Clearance of Vessels, and records of Commerce in Coal, Hay, Hides, Wool, Cheese, Butter, Flax-seed, and Live-Stock and Provisions. Each number contains an appendix presenting a special municipal study. The appendices are for the first three numbers as follows: I, Comprehensive statistics of Chicago, 1893–1900, by years and four-year periods; II, Comparative statistics of Revenues and Exports, and of Police Work, in twenty American cities, 1900; and III, Growth of the Water-works system of Chicago, 1854–1900. The publication is in quarto, attractively printed.

E. H. D.

THE UPPER MILLION OF ENGLAND'S INDUSTRIAL ARMY.

The Charity Organization Review (London) for September, 1901, contains (pages 121 to 136) an article entitled "The Upper Million of Our Industrial Army," based on the *Abstract of Labor Statistics* of the Labor Department of London for 1901. The article deals with the Trade Union development in England, and states that, in 1899, the unions numbered 1292 in the United Kingdom, with a membership of 1,802,518. Of these, almost two-thirds are included in 100 societies, and over one-third in but 20 unions. In the decade 1890–99, the membership increased 24.4 per cent, and the per capita funds 88 per cent. The general effect of unionism is stated to be a "general levelling-up" of wages. In the metal trades in London, for instance, the minimum wages fifteen years ago was 70 per cent of the maximum; now it is 83 per cent. It is estimated that, in all trades, about one million wage-earners — about one-eighth of the adult male laborers of England — receive as much as $400 per year. In the building, cabinet making, printing, and metal trades,— with the exception of but one case,— short hours go hand in hand with high wages. The most powerful unions are of the iron-founders and the pattern-makers. In most trades, London is from 5 to 15 per cent above the other cities in wages. Second to it is, not Liverpool, Manchester or Glasgow, but Newcastle-on-Tyne. The South and East county towns are far below the rest of England. In the various unionist conflicts with manufacturers, the proportion of cases where the unions took the offensive was in 1898 fifteen to one, in 1900 only eight to one. The number of neutral laborers thrown out of employment in result of strikes and lock-outs was in 1900 from one-fifth to one-third of the actual participants.

The *Abstract* shows that in diseases of the respiratory organs, the country notably is almost 50 per cent lower than in London and other manufacturing cities; but decidedly higher than in cities is the country mortality in cancerous diseases. Deaths from diseases of the heart and blood are less in manufacturing regions than in agricultural localities; while the reverse is true in the case of deaths from maladies of the digestive organs.

In regard to female labor, the predominant working-class opinion is against the employment of married women. "Of course," says the article, "a vast number of female hands are engaged in the textile factories of Lancashire, Yorkshire and the west of England. Out of 778,773 hands in the cotton, wool and worsted mills in the United Kingdom in 1897, no less than 474,093 were females. Now the proportion borne by married women to the totality of adult female operatives in the chief manufacturing districts of Lancashire, Yorkshire, Cheshire and Gloucestershire during 1894 . . . . stands for the entire area at 18.2 per cent.

E. H. D.

AMERICAN

STATISTICAL ASSOCIATION.

NEW SERIES, No. 58. JUNE, 1902.

WHAT IS THE CENTER OF AN AREA, OR THE CENTER OF A POPULATION?

BY JOHN F. HAYFORD.

There are many curious misconceptions and absurdities in common circulation in regard to the meaning of the expressions "center of area" and "center of population." The educated, as well as the relatively ignorant, man seems to be puzzled in regard to these terms. No accurate definitions of them exist in current usage, nor can satisfactorily accurate definitions be found in the dictionaries. This paper is an attempt to help in the bringing about of a clear conception of these terms and to remove some of the real and apparent absurdities which arise when they are used.

The center of an area is a point such that if a perpendicular be dropped from each point to *any* one line drawn through said center the sum of the perpendiculars lying on one side of the line will be equal to the sum of the perpendiculars on the other side. The point fixed upon by this definition is the same that would be obtained by representing the area by a thin plate of metal of uniform thickness and density and taking the center of gravity, or point about which the plate will balance, to represent the center of area.

The mathematical process of locating a center of area is not difficult. A line is first drawn across the area in any assumed direction. For convenience it is well to draw this line in such a position that it will pass as nearly through the center as that point can be located by mere inspection. The area is then divided up into small areas each of which lies completely on one side or the other of the selected line. The sum of the products is then taken separately for each side of the line, of each area into distance of the center from the line. The difference of these two sums of products divided by the total area is then the distance which the selected line must be shifted sidewise to make it pass through the center required, and the direction of the shift must be toward the side on which the sum of the products was the greater. In the new position of the line the sums of the products will be the same on the two sides of the line. A second trial line is now drawn in some other direction than the first, and preferably at right angles to it, and the whole process repeated. Two lines will thus have been obtained each of which pass through the required center which therefore must be at their intersection.

It may be noted by the careful reader that in the above process it is assumed that the center of each of the small component areas into which the total area is divided may be determined. If the component areas are regular figures, such as squares or rectangles, there is no difficulty in locating the center of area of each. If they are not regular figures the position of the center of each may be estimated by eye and the accuracy of the final result tested by some indirect process, or these centers may each be located by a separate process similar to that which is used for the whole area. Obviously the smaller each component area is the more accurately can its center be located by eye, and the less is the effect upon the final result of a given error in the location of each such secondary center. Hence any desired degree of accuracy may be obtained by sufficiently minute subdivision.

There are four properties or characteristics of the center of area defined and located, as indicated above, which are important and interesting.

First, as already stated, it corresponds to the center of gravity if the area be considered to be represented by a thin plate of uniform thickness and density.

Second, The point as thus defined is always unique, that is, there is but one center under the definition for each area. After the center has been located by finding two lines each fulfilling the condition that the sum of the perpendiculars on the two sides shall be the same, it will be found that for any other line through this center the condition is also fulfilled. Or, conversely, the center obtained for any given area is absolutely independent of the directions of the two lines used to fix the center. To illustrate, if in a given county there is a man upon the center of each square mile of area and no other population, and if every man travels to the center of area of the county by first going directly east or west to the meridian passing through the center and then following the meridian to the center, the total distance traveled to the westward will be equal to the total eastward travel, and the total distance traveled to the northward will be equal to the total to the southward. The totals will also be equal in pairs if the traveling be done parallel to any other pair of rectangular axes, let us say, northwest and southeast and northeast and southwest.

Third, The sum of the squares of the perpendiculars dropped from each point of the area to a line passing through the center is smaller than for any other line parallel to it.

Fourth, The sum of the squares of the lines drawn from each point of the area to the center is smaller than the sum of the squares of such lines drawn to any other point. Or, in other words, if it be assumed as before that there is a man on the center of each square mile of a county and each man goes to the center over a straight course the sum of the squares of the distances traveled will be less than if they so traveled to any other point than the center.

The third and fourth properties of the center are chiefly interesting from a mathematical point of view because they indicate a close analogy between the center so defined and the mean of number of quantities.

Aside from the definition of center given above the most common definition set forth is what may be called the median or bisector definition. The center is defined as being the point at which two lines which bisect the area intersect. According to this definition exactly one half of a county lies on each side of a meridian drawn through its center and exactly one half on each side of an east and west line drawn through its center.

Many people believe the center as thus defined to be the same as that given by the definition advocated in this paper and which for convenience we will call the gravity definition as contrasted with the bisector definition. The two definitions do not, however, give the same point except in a few cases. In some cases the two points are far apart.

The bisector definition is often put forward by people who know that it gives a point different from the gravity definition, and who put forward the contention that the gravity definition is absurd. They say, and it is true, that under the gravity definition the addition or subtraction of a given area far from the center moves the center much more than if such area were added or subtracted near the center. They say it is absurd that distant areas should have so much more effect upon the location of the center than near areas. This is not really an absurdity. The quickest way, however, of convincing a man who advocates the bisector definition because of this alleged absurdity in the gravity definition is not by attempting to show him that the alleged absurdity he has pointed out is merely apparent and not real, but by showing him the real absurdities in the bisector definition.

The absurdities of the bisector definition may quickly be brought out by such a diagram as Figure 1.

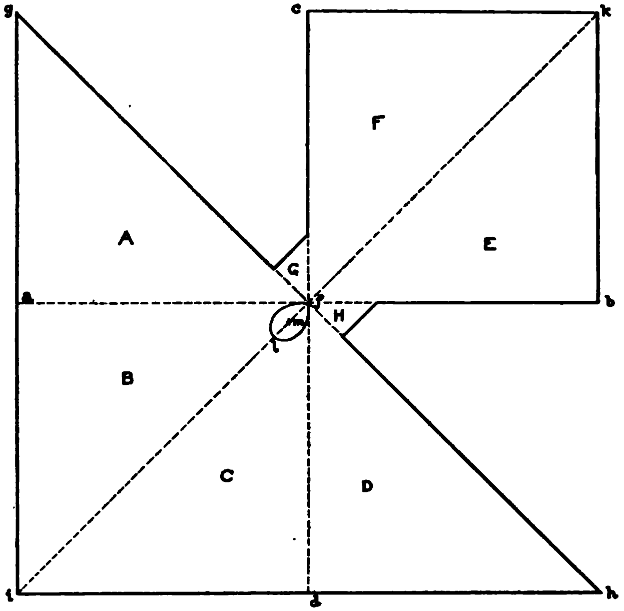

FIG. I.

The area shown is a square with two portions cut away. Of the triangles into which the area is divided by dotted lines the large triangles *A*, *B*, *C*, *D*, *E* and *F* are all equal and the small triangles *G* and *H* are also equal. The lines *ab* and *cd* each bisect the area and, therefore, by the bisector definition the point *f* is the center. Look now at the line *gh*, which passes through the alleged center *f*. *Four* large triangles, *A*, *B*, *C*, and *D*, lie on one side of *gh* while on the other side there are only *two* large triangles, *E* and *F*, and the two small triangles, *G* and *H*. This line *gh*, which passes through the alleged center under the bisector definition, has nearly two-thirds of the whole area on one side of it. Obviously there is an absurdity here.

If the line *gh* be moved parallel to itself until it does bisect the area it will be found to pass through the point *l*. The line *ik* bisects the area. Hence under the bisector definition *l* is the center of area as well as *f*. In other words, this one area according to the bisector definition has two centers, which is an obvious absurdity.

These two centers under the bisector definition have been obtained by using two pairs of rectangular bisectors of which the second pair are at an angle of forty-five degrees with the first pair. It can be shown that for this area a different center will be obtained for each pair of bisectors used. If only bisectors which are at right angles are used it will be found that this area has under the bisector definition an infinite number of centers all lying in the periphery of an oval having its extreme points at *f* and *l*.

If the advocate of the bisector definition is not sufficiently convinced of its absurdity by the fact that it gives each irregular area an infinite number of centers instead of one he may be invited to consider the matter from another point of view.

It is axiomatic that if any portion of an area be moved the center should also move provided the movement of one portion of the area was not accompanied by a simultaneous, symetrical movement of a similar portion of the area.

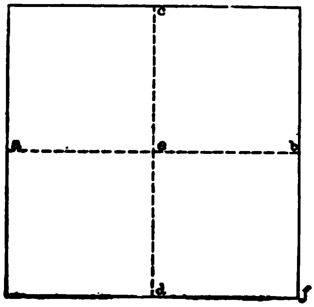

FIG. 2.

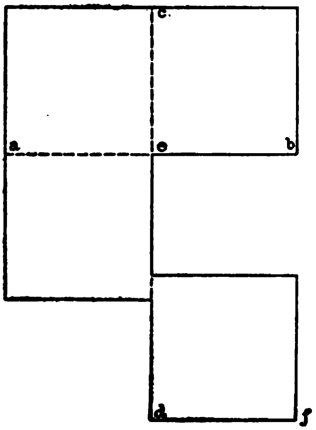

FIG. 3.

Figure 2 represents a square of which the center under the bisector definition is located at *e*, the intersection of the bisectors *ab* and *cd*. Figure 3 represents the same area after the portion *debf* has been moved a considerable distance. The lines *ab* and *cd* are, however, still bisectors and under the bisector definition the center is still at the point *e*. In fact the portion *debf* might have been moved about and distorted to any extent whatever provided no portion of it were carried across either bisector, *cd* or *ab*, without moving the center according to the bisector definition.

Both the absurdities pointed out in connection with the bisector definition are real and are so contradictory to the most elementary and fundamental conceptions of the word center that further comment is unnecessary, except perhaps to call attention by way of contrast to the fact that under the gravity definition each area has but one center, and any movement of any portion of the area will move the center unless it is accompanied by some symetrical movement of another portion of the area.

In Figure 1 the center according to the gravity definition lies within the oval at the point marked *m*.

What is the center of population of the United States? It is defined correctly as follows in Bulletin No. 62 of the Twelfth Census: "The center of population is the center of gravity of the population of the country, each individual being assumed to have the same weight." This corresponds exactly to the gravity definition of a center of area.

The process of locating the center of population as outlined in this bulletin also corresponds exactly to the process of locating the center of area given in the first part of this paper.

Various objectors say that this definition of the center of population is absurd. The greatest apparent absurdity urged in objection is that a man at a distance from the center has much more influence upon the center than a man near at hand. The death of a man in San Francisco moves the center of population more than the death of a hundred men in Indiana living within ten miles of the center. These objectors advocate the use of the bisector definition for determining the center of population.

In Bulletin No. 62 a concession to these objectors has been made and a "median point" of the population has been located. The "median point" is defined as "the point of intersection of the line dividing the population equally north and south with the line dividing it equally east and west" This corresponds exactly to the bisector definition of the center of an area with the exception that this defintion has carefully been narrowed by limiting the direction of the bisectors to north and south and east and west so that it will give but one median point. If this restriction be removed so that the two bisectors may be taken in any direction it will be found that the population of the United States has an infinite number of "median points" just as the area in Figure 1 has an infinite number of centers according to the bisector definition.

It may be urged that the center of population according to the gravity definition and all the possible median points are all confined to so small an area that it is immaterial which is taken as the center. This proposition will not stand examination.

The median point for 1900 as defined in Bulletin No. 62 is eighty miles to north-eastward of the center according to the gravity definition. This distance is greater than the total movement of the latter point in the last two decades. This distance between the center and the median point of a population depends, firstly, upon the shape of the area over which the population is distributed; secondly, upon the distribution of the density of population over this area; and thirdly, upon the assumed direction of the two bisectors used to locate the median point. The first two of these controlling factors are inherent in the facts but the third depends upon a purely arbitrary decision as to the directions of the bisectors. Just as the center of area under the bisector definition may be made to travel as indicated in Figure 1 by changing the direction of the bisectors, so the median point of population may be moved by a similar arbitrary decision. After studying carefully a model plate of the form indicated in Figure 1, the writer concluded that an approximate estimate could be made of the direction of a line bisecting the population of the United States which would be at the maximum distance from the median point as located in Bulletin No. 62. The direction was estimated and the position of the corresponding bisector located. This bisector just touches the north-eastern corner of Massachusetts and passes twenty five miles south of Cincinnati. The median point as located in Bulletin No. 62 is seventy miles northward and a little to the westward of Cincinnati. No point of this oblique bisector is within eighty miles of the median point as given in Bulletin No. 62. Another bisector intersecting this one would locate a median point, and it is evident that such a point must be more than eighty miles from the published median point. By arbitrarily changing the direction of the bisectors used to fix it the median point for 1900 can be made therefore to travel about over distances as great as the movement of the properly defined center of population in the last twenty or thirty years.

It may be argued that a knowledge of the exact location of the center of population is of little value, that its location has no appreciable relation of much statistical value to any of the important facts in regard to population. Is this true? In so far as the writer is aware the most important property of the center of population is that its movement from decade to decade indicates the general movement of the population. This is the only important use to which the knowledge of the center has been put in the past, and is absolutely the only use of it made in Bulletin No. 62. Let the relative merits for this purpose of the median point as defined in Bulletin No. 62 and of the center be considered.

As stated in Bulletin No. 62 the movements of the median point "from census to census bear no relation to the movements of the population, since only movements by which bodies of population are transferred across its parallel or its meridian have any influence upon its position." If the whole population of Chicago were suddenly to move to Seattle the median point would remain absolutely stationary. On the other hand, the removal of a hundred men from a certain township in Indiana to the adjoining township on the other side of the median point would move it appreciably. Hence the median point gives no information as to the general movement of the population.

The center of population as fixed by the gravity definition responds to every movement of every individual. It may be shown mathematically, either in the abstract form or from an analysis of the process by which the center is located, that it responds exactly to each movement of every individual by moving in a direction parallel to the movement of the individual, and by an amount exactly proportional to his movement but on a reduced scale fixed by the ratio which this individual bears to the whole population. Thus, if the total population is 75,000,000 and every one stands still except one man the center of population will always move when this one man moves, in a path exactly parallel and similar in every respect to his motion but on the reduced scale of $\frac{1}{75000000}$. If the man moves 1200 miles the center will move about one inch. It is worth while to note in passing that the effect of a given motion on the part of one man upon the position of the center is absolutely independent of the distance of this man from the center. If more than one man moves the movements of the center will be the combined movement due to the different men just as if the movements took place successively instead of simultaneously. Thus if a train moving at thirty miles an hour carries two hundred people the center will respond, provided no other persons move, by moving about five inches each hour on a path similar in every respect to that followed by the train. If, however, another train were moving at the same time in the reverse direction the movement of the center of population due to this train would partially or wholly neutralize that due to the first train. For, any hour the movement of the center of population is due to the movements of millions of indiviuals, and is the same as if the separate movements of indiviuals had taken place successively and the center had responded on a reduced scale of $\frac{1}{75000000}$ to each in turn. In short the movement of the center of population is an accurate indication on a small scale of the general movement of population.

Or, looking at it from another point of view, the movement of the center of population is an accurate representation of the *average movement of the population.* A movement of a single individual a certain distance is obviously equivalent to a corresponding movement of 75,000,000 people through $\frac{1}{75000000}$ that distance, or the latter motion on the part of the center is the average motion of the whole population.

The movement of the population during a decade is made up not only of the movements of individuals but also of eliminations by death and emigration, and additions by birth and immigration. The effect of the death or emigration of an individual on the position of the center of population defined and computed as indicated in the foregoing is the same as if said individual were first to travel to the center of population and then disappear. Similarly, the effect of a birth or the immigration of an individual is the same as if said individual came into existence at the center of population and then moved to his actual location in the country. This effect of the individuals who appear or disappear from the total population upon the computed position of the center is not so irrational as might seem at first sight. The combined effect of a death in Boston and a birth in San Francisco upon the position of the center should obviously be the same as if one individual moved from Boston to San Francisco, and this is in turn equivalent to one person going from Boston to the center and disappearing while the other appears at the center and goes to San Francisco. Similarly the combined effect of the landing of an immigrant at New York and the departure of an emigrant from Seattle upon the center of population is and should be the same as if a man moved from Seattle to New York.

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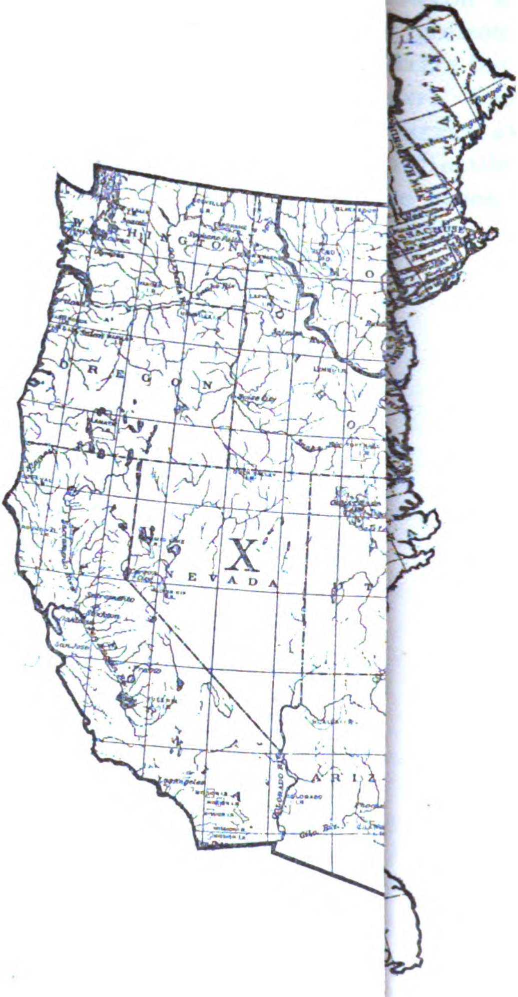

ELEMENT OF LABOR IN RAILWAY EXPENDITURES.

By **Andrew L. Horst.**

For the successful operation of an industrial enterprise provision must be made for depreciation before any earnings can be set aside for the payment of interest or dividends. Any other course consistently followed would soon leave the stock and bond holders only a worthless property. In a factory depreciation is usually provided for by setting aside yearly a certain sum of money from the gross earnings, but the practice of railways differs from this. Roadbed, track and equipment are renewed as fast as they deteriorate, and the cost is charged to operating expenses. In this way the plant is kept up to its standard at the expense of the net earnings, but the effect is the same as if a specific sum had been set aside from the income. This practice of the railways allows them to vary the amount of replacement from year to year according to business conditions. During prosperous years maintenance items may be very heavy, and in times of depression much less of this work may be done because payments to bond and stockholders at such times form a larger proportion of the gross income. The first resort when pressed for money to pay bond interest and to keep up dividends is to cut down operating expenses by stopping repairs and renewals.

The necessity for the reduction of expense is thus brought especially to the attention of railway men in the time of depression. The importance, however, of a systematic reduction in operating expenses, in order to handle traffic economically, is always present. Thus it has been said, "retrenchment is of two kinds, that which is real and that which borrows from the future."[1]

In a time of great necessity much retrenchment is wholly without method, though for a short time great reductions can be made. Thus it has been pointed out[1] that from maintenance of way and structures 15 or 20 per cent of the entire expenses may be borrowed for six months, from 5 to 8 per cent from maintenance of equipment, and one per cent by a reduction of the labor left in the maintenance departments. During the years immediately following 1893 the saving in cost of operation was largely a borrowing from the capital invested in the property, so that much of the increased expenditures of the last few years has been a repayment at a high rate of discount for these loans.

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[1] J. S. Eaton, *Railway Operations*, p. 45.

Real retrenchment, on the other hand, is a systematic reduction and "does not begin at any particular time nor at any particular point, but should be going on all the time and everywhere." This consists of the substitution of new methods and new tools wherever they will produce economy. The complex parts may be so rearranged as to lead to an economy in the operation of the whole system.

The statistics of railway operations in the United States from 1892 to 1900 afford an excellent opportunity to study the results of depression and the consequences of prosperity upon railway operations.[2]

In 1894 the movement of freight traffic was 13,253,007,131 ton-miles, or 14.16 per cent less than during 1893. From 1890 to 1893 the traffic density showed an average annual increase of 25,791 tons carried one mile per mile of line, but in 1894 the decrease was 93,980. Freight train mileage decreased by 61,912,283, while the average annual increase from 1890 to 1893 had been 31,379,733. It followed then that for 1894 every income item showed a decrease. Gross earnings were $147,390,077, or 12 per cent less in 1894 than in 1893, and net earnings $50,883,100 less. The year closed with a deficit of $45,851,294, though operating expenses were decreased $96,506,977, or 11.66 per cent.

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[1] J. S. Eaton, *Railway Operations*, p. 47.

[2] This paper is based upon information found in the Annual Reports on the Statistics of Railways in the United States, prepared by the Statistician to the Interstate Commerce Commission, Washington, D. C., 1889–1901.

A suggestive article by H. T. Newcomb, "Some of the Consequences of Railway Prosperity," appeared in *Gunton's Magazine*, December, 1900, in which the effects of prosperity on railway expenditure were shown by comparing the years 1895 and 1899. This paper consequently approaches in some parts the plan there followed.

To meet this deficit and to make payment of the usual dividends it was necessary to reduce the corporate investment in stock and bonds by $7,094,413, to reduce the cash and current assets by $44,402,673, and to draw upon the fund of materials and supplies to such an extent that the stock on hand was worth $13,988,383 less at the close than at the beginning of the year.

The chief resource in meeting the decline in revenue was to reduce the cost of operation, since fixed charges must be paid and dividends yield only slowly to a decline in income. This reduction in operating expenses amounted to $96,506,977, or 11.66 per cent for 1894. Of this amount $25,588,990, or 26.5 per cent, was taken from the maintenance of way, reduced 15.12 per cent; $23,981,383, or 24.85 per cent from maintenance of equipment, reduced 17.52 per cent; $40,952,540, or 42.43 per cent from conducting transportation, reduced 9.40 per cent; and $5,777,340, or 6 per cent, from general expenses, reduced 6.76 per cent. Or combining maintenance of way and structures and maintenance of equipment, $49,570,373, or 51.36 per cent of the retrenchment was accomplished by reducing expenditures in these departments 16.19 per cent.

Geographically there was a wide variation in the extent of these reductions. Thus the largest total of 17.4 per cent was in the Northwestern States (Group VII), and 13.9 per cent in the Central West (VIII). In contrast to this were Texas and the South Atlantic States (IX and IV). This reduction was accomplished in different items in the several territorial groups. In New England (I) equipment furnished the principal reduction, maintenance of way and of equipment in the Middle States (II), while in the Middle West (III) maintenance of way was most largely reduced. The chief resort in the South Atlantic States (IV), in the Central Northwest (VI), in the Central West (VIII) and in the Pacific States (X) was the item of equipment. Maintenance of way, on the other hand, supplied the reduction in the Southern Mississippi States (V), the Northwestern (VII) and contributed largely in the Pacific States (X). In contrast to this, general expenses increased in Texas (IX) and the South Atlantic States (IV).

DECREASE OF OPERATING EXPENSES, PER CENT DECREASE 1894 UNDER 1893, AND PROPORTION OF OPERATING EXPENSES 1893, 1894.

Source of Expenditure.	Decrease.		Proportion of Decrease.	Proportion of Total Operating Expenses.	
	Amount.	Per cent.		1893.	1894.
Maintenance of way, etc. .	$25,588,990	15.12	26.51	20.45	19.64
Maintenance of equipment	23,981,383	17.52	24.85	16.53	15.43
Conducting transportation	40,952,540	9.40	42.43	52.60	53.94
General expenses	5,777,340	6.76	6.00	10.33	10.91
Unclassified	206,724	26.76	.21	.09	.08
Total	$96,506,977	11.66	100.00	100.00	100.00
Maintenance: way, structures, and equipment . .	49,570,373	16.19	51.36	36.98	35.07

DECREASE IN OPERATING EXPENSES 1894 UNDER 1893, BY GROUPS AND SOURCES OF EXPENDITURE.

Group.	Total Amount.	Total Per cent.	Maintenance of		Conducting Transportation. Per cent.	General Expenses. Per cent.
			Way. Per cent.	Equipment. Per cent.		
I	$6,538,595	10.75	13.68	26.30	5.04	14.66
II . . .	25,028,656	12.14	17.53	17.79	9.19	8.33
III . . .	16,212,619	12.04	21.95	11.23	10.69	.41
IV . . .	1,390,067	4.56	3.19	15.56	2.37	2.59[1]
V . . .	6,430,385	11.02	15.21	11.87	10.82	3.56
VI . . .	21,408,222	13.45	14.80	22.15	11.47	8.11
VII . . .	5,321,847	17.38	17.15	18.44	16.49	20.22
VIII . .	10,238,600	13.95	11.36	24.09	12.18	12.63
IX . . .	32,434	.10	5.21	2.92	1.85[1]	5.38[1]
X	3,905,552	9.14	10.83	14.12	7.22	5.45
Total . .	$96,506,977	11.66	15.12	17.52	9.40	6.76

[1] Increase.

A comparison of the railways in the Mississippi Valley can be made with those in the Atlantic and Pacific States, and in Texas, from which it is seen that operating expenses in the Mississippi Valley were reduced more than in the rest of the country.

DECREASE IN OPERATING EXPENSES, 1894 UNDER 1893.

Mississippi Valley.			Atlantic, Pacific States and Texas.		
Groups.	Decrease.	Per cent.	Groups.	Decrease.	Per cent.
III . . .	$16,212,619	12.04	I	$ 6,538,595	10.75
V	6,430,385	11.02	II . . .	25,028,656	12.14
VI . . .	21,408,222	13.45	IV . . .	1,390,067	4.56
VII . . .	5,321,847	17.38	IX . . .	32,434	.10
VIII . . .	10,238,600	13.95	X . . .	3,905,552	9.14
Total . . .	$59,611,673	13.08	Total . .	$36,895,304	9.92

A large part of this reduction in expenditure was secured by reducing the number of employees 93,994 or 10.76 per cent. Though this reduction affected all classes, it was greatest among those engaged in maintaining the character of roadway, structures, and equipment. Thus in maintenance of way, where 27 to 29 per cent of the employees are found, the number was reduced about 16 per cent, making up 44 per cent of the total decrease; 25 per cent of the reduction was made by cutting down maintenance of equipment 13 per cent; and 34 per cent by reducing conducting transportation only 8 per cent. If the decrease in the number of employees per 100 miles of line is taken the reduction in the maintenance departments is further shown.

DECREASE IN NUMBER OF EMPLOYEES PER 100 MILES.

Class of Work.	1893.	1894.	Per cent Decrease.
Maintenance of way	151	123	18.54
Maintenance of equipment	103	86	16.50
Conducting transportation	234	208	11.11
General expenses	21	18	14.29
Unclassified	5	8	60.00 [1]
Total	515	444	13.78

[1] Increase.

Interest attaches to the geographical distribution of this reduction. Thus in the whole country the only increase in the number of employees took place in the Pacific States (X), and the greatest decrease in the Middle West (III) and in the Central Northwest. But in these instances exceptional conditions contributed to the result. In the first case 300 miles, not included in the report of 1893, of the Great Northern Railway were put into operation, and the traffic of the latter groups had been especially stimulated by the Columbian Exposition. The largest curtailment of expenditure had been in the Northwest (VII), and here, also, the largest reduction in maintenance and in movement seems to have taken place.

An analysis, according to the classes of employees, shows that the principal reduction was made among trackmen, reduced 16 per cent or 31 per cent of the total, and among laborers. In conducting transportation other trainmen and firemen were the classes to be cut down; and in maintenance of equipment, carpenters and other shopmen. It may then be said that, as between the skilled and the unskilled classes, the chief reduction was made in the classes of comparatively unskilled labor.

DECREASE IN NUMBER OF EMPLOYEES, 1894 UNDER 1893.

Class of Work.	Decrease.		Proportion of Decrease.	Proportion of Total Number.	
	Number.	Per cent.		1893.	1894.
Maintenance of way, etc. .	40,841	15.95	43.45	29.33	27.63
Maintenance of equipment	23,490	13.39	24.99	20.08	19.49
Conducting transportation	32,023	8.05	34.06	45.55	46.94
General administration .	3,635	10.27	3.86	4.05	4.07
Unclassified	5,995[1]	69.54[1]	6.36[1]	.99	1.87
Total	93,994	10.76	100.00	100.00	100.00
Maintenance: way, structures, and equipment . .	64,331	14.90	68.44	49.41	47.12

[1] Increase.

DECREASE IN NUMBER OF EMPLOYEES BY GROUPS AND BY CLASS OF WORK, 1894 UNDER 1893.

Group.	Total Number.	Total Per cent.	Maintenance of Way. Per cent.	Maintenance of Equipment. Per cent.	Conducting Transportation. Per cent.	General Administration. Per cent.
I . . .	7,249	11.06	18.98	7.79	7.99	11.91
II . . .	15,450	6.89	8.69	6.37	6.56	1.29
III . . .	20,680	14.99	27.30	15.72	8.97	10.18
IV . . .	3,698	8.64	17.13	1.46[1]	5.05	1.25[1]
V . . .	8,237	12.40	14.40	18.91	7.25	4.60
VI . . .	26,168	15.36	18.00	12.61	9.68	12.86
VII . .	2,689	10.12	29.34	60.49	38.34	52.91
VIII . .	7,762	10.89	13.84	23.02	9.93	16.37
IX . . .	4,469	12.51	23.47	16.02	8.17	6.29[1]
X . . .	2,408[1]	7.37	14.38	5.42	13.37[1]	25.95
Total . .	93,994	10.76	15.95	13.39	8.05	10.27

[1] Increase.

CLASSIFICATION OF EMPLOYEES, DECREASE AND PROPORTIONATE DECREASE 1894 UNDER 1893.

Class.	Decrease. Number.	Decrease. Per cent.	Per cent of Total Decrease.
General officers . . . Other officers	425[1]	6.43[1]	.45[1]
General office clerks . .	2,805	10.20	2.98
Station agents	180[1]	.64[1]	.19[1]
Other station men . . .	4,031	5.36	4.29
Enginemen	3,315	8.55	3.53
Firemen	4,032	9.99	4.29
Conductors	2,714	9.86	2.89
Other trainmen	9,542	13.08	10.15
Machinists	1,624	5.26	1.73
Carpenters	5,550	13.25	5.90
Other shopmen	9,350	9.98	9.95
Section foremen	39	.13	.04
Other trackmen	29,443	16.34	31.32
Switchmen, flagmen . .	2,829	6.15	3.01
Telegraph operators . .	474	2.09	.51
All other employees . . .	18,851	16.89	20.05
Total.	93,994	10.76	100.00

[1] Increase.

In contrast to this depression and heroic retrenchment, interest attaches to the revival of industry and the character of the expenditure consequent to this increased commercial activity. For the three years, 1894, 1895, and 1897 the railways of the United States showed deficits; for the year 1893 the surplus was $8,116,745; and for 1896, only $1,534,169. The renewed prosperity of the last few years is shown by comparing the gross earnings per mile of line operated, from which it is seen that gross earnings reached those of 1893 only in 1900; and compared with 1894 showed an increase of 26 per cent.

GROSS EARNINGS FROM OPERATION, YEARS ENDING JUNE 30.

Year.	Per Mile of Line.	Year.	Per Mile of Line.
1890	$6,725	1896	$6,320
1891	6,800	1897	6,122
1892	7,213	1898	6,755
1893	7,190	1899	7,006
1894	6,109	1900	7,722
1895	6,050		

This improvement in revenue represented an absolute improvement, and did not mean, as in the case of an industrial enterprise, exceptional profits made by reason of a rise in the market value of the product, since the revenue per ton-mile increased over 1899 only seven-tenths of one per cent and decreased, under 1893, 17 per cent.[1] There was also no stock of goods on hand, the book value of which could be marked up. The increased revenue was due thus almost solely to an enlargement of the volume of traffic.

This increase in the volume of business involved an addition to the expenses; the number of men was increased, and the outlays for material and supplies were also enlarged. In this way the bulk of the earnings was used up, so that a comparatively small part went to bond and stockholders. Thus, in 1894, though there was a deficit of $45,851,294 from operation, $95,515,226 was paid in dividends; in 1895, $85,287,543 was paid as dividends, though the deficit from operation was $29,845,241. But, in 1900, $139,597,972 went as dividends, and of this amount $118,624,409 was paid to individuals and corporations other than railways. There remained "available for adjustments and improvements" $142,754,358 in 1900, and of this $25,500,035 went into permanent improvements, besides the amounts on account of operation expenses, and $87,657,933 remained as a surplus.

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[1] The average revenue per ton of freight per mile in 1893 was .878 cents; in 1899 it was .724 cents; and in 1900, .729 cents.

INCREASE OF OPERATING EXPENSES, PER CENT INCREASE 1900 OVER 1895, AND PROPORTION OF OPERATING EXPENSES 1895, 1900.

Source of Expenditure.	Increase.		Proportion of Increase.	Proportion of Total Operating Expenses.	
	Amount.	Per cent.		1895.	1900.
Maintenance of way, etc. .	$67,244,177	46.70	28.53	19.84	21.97
Maintenance of equipment	67,385,171	59.22	28.59	15.68	18.84
Conducting transportation	97,967,368	22.72	41.56	59.41	55.04
General expenses	3,421,748	9.53	1.45	4.95	4.09
Unclassified	310,363 [1]	34.48 [1]	.13 [1]	.12	.06
Total.	$235,708,096	32.48	100.00	100.00	100.00
Maintenance : way, structures and equipment . .	134,629,348	52.23	57.12	35.52	40.81

[1] Decrease.

The movement of railway expenditures as a result of these prosperous conditions can be shown by a comparison of the operating expenses for the years 1900 and 1895.[1] Thus the increase of 1900 over 1895 was 32.48 per cent, of which 28.5 per cent came from increasing maintenance of way 46.7 per cent; 28.6 per cent from maintenance of equipment increased 59 per cent. Or, taking these two items together, 57 per cent of the increase was caused by increasing these maintenance items 52 per cent. The effect of this is shown by the proportion of these items in the total operating expenses between the two years.

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[1] In 1895 the "Revised Classification of Operating Expenses" was first used, so that the classification used in 1895 and since then differs somewhat from that used in 1894. To make a comparison with 1900 the year 1895 should be used.

This increase in operating expenses should be compared with the reduction made in 1894. Thus maintenance of the property in 1894 was reduced $49,570,373, or 16 per cent, while the total decrease was 11.6 per cent. In 1900 the expenditures for maintenance of the property exceeded those of 1895 by 52 per cent, while the total increase was 32.5 per cent. Thus the increase in 1900 over 1895 of the expenditures for these maintenance items was equal to a return of more than two and one-half times the decrease in 1894. If the comparison is made with 1893, it is found that for maintenance alone $86,260,116 or 28 per cent more was expended in 1900 than in 1893. This was equivalent to the return of the principal borrowed from the property in 1894 and 74 per cent interest.

The effect of this increased expenditure upon business must have been very important. The demands of the railways are diversified and affect many industries. The modification of these demands, due to periods of depression and prosperity, are an important determinant of the activity or stagnation of these important industries. The table on page 69 presents an analysis of the increase in certain classes of operating expenses for the years 1895 and 1900.

These classified expenditures included both direct payments to employees in making the different kinds of repairs and renewals as well as payments to outside firms and individuals for materials that were used in repairs and renewals. The comparison should be made between the increase in items of renewals and repairs and the items of conducting transportation, from which it is found that the increase for engine and roundhouse men was 30 per cent, switchmen 29 per cent, and superintendence 45 per cent. On the other hand, expenditures for buildings and fixtures increased 104 per cent, docks and wharves 79 per cent, freight cars 75 per cent, and locomotives 62 per cent.

INCREASE OF CLASSIFIED OPERATING EXPENSES 1900 OVER 1895.

	Increase.	
	Amount.	Per cent.
Repairs and renewals:—		
Roadway	$32,434,118	46.94
Rails	392,677	3.87
Ties	8,085,028	40.63
Bridges and culverts	9,650,787	63.02
Fences, etc.	2,188,605	62.38
Buildings and fixtures	11,643,452	104.63
Docks and wharves	1,255,226	78.93
Telegraph	509,048	56.18
Locomotives	23,938,112	62.62
Passenger cars	5,944,799	39.82
Freight cars	30,427,653	74.99
Work cars	1,506,762	184.11
Marine equipment	1,185,746	104.77
Shop machinery and tools	2,505,289	81.60
Conducting transportation:—		
Engine and roundhouse men	20,547,031	30.68
Fuel for locomotives	20,322,220	28.91
Train service	12,929,541	23.95
Station service	10,816,794	19.75
Switchmen, flagmen and watchmen	8,333,747	29.67
Superintendence	5,304,568	45.72
Salaries of general officers	615,013	6.84
Salaries of clerks and attendants	2,372,188	25.37
Total	$224,804,614	42.13
Total operating expenses	$248,203,915	36.77

These figures show the great increase in expenditures for equipment and structures. But it can hardly be concluded therefrom that there was a greater renewal of equipment than repairs on roadway. The items in maintenance of way are made up very largely of compensation paid to labor, while expenditures for renewal of equipment involve large payments for material and finished products. The higher prices,[1] then, for iron and steel, metals and lumber, made it necessary to expend more in 1900 than in 1895 to renew or replace the same amount of equipment. It may be concluded that the volume of labor employed directly increased relatively more during this time than the volume or units of equipment maintained, though the amount expended for maintenance of equipment showed a greater increase than that for maintenance of way.

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[1] In the fiscal year 1894–95 the index number of iron manufactures was 52; in 1899–1900 for the same group it was 89. For the group of minerals, metals and lumber in 1894–95 the index number was 92; in 1895–96 it was 89; in 1899–1900, 110 and even 115 in November and December, 1899.—(*Quarterly Bulletin, Bureau of Economic Research*, July and October, 1900.)

In the *Final Report of the Industrial Commission* (vol. xix), p.289, the great increase in the cost of material and supplies of 1900, as compared with 1897, is shown for 62 articles. The percentage increase in the price of some of the most important articles was as follows: Lubricating oil, 120; machine bolts, 150; steel axles, 131; track spikes, 135; nails, 109; coal, 44; sheet iron and steel, 48.

The full effect, however, of high prices in 1899 and 1900 should not be looked for in the expenditures of 1900. Much of the material used in 1900 was purchased a year or more earlier, and so at lower prices. Moreover, the large increase in the volume of new equipment during the years 1898-1900, much of which was not replacement, but an addition to the earning power of the property and consequently charged to capital account, did not require repairs during the first few years. The burden of repairing the equipment may be fully felt only within the next few years, so that in connection with high prices expenditures for maintenance of equipment may be expected to show a steady increase. Thus the expenditures for material and supplies may become increasingly more important than the increase in the direct employment of labor.

This tendency can perhaps be seen already by comparing the increase in the expenditures for maintenence of way and of equipment for several years. Thus, in 1895, 19.824 per cent of total classified operating expenses went to maintenance of way, and 21.797 per cent in 1900 went to the same source; and for the same years 15.761 per cent and 18.929 per cent, respectively, went to maintenance of equipment. This was an increase of 1.973 for maintenance of way and of 3.168 for equipment, or an increase almost two-thirds greater for equipment than for maintenance of way. The difference in the relative increase is more striking by taking 1898 for comparison. In this year maintenance of way was 21.028 per cent of total classified expenses, showing an increase for 1900 of .769; and maintenance of equipment 17.359 per cent, an increase of 1.570. For these two years, then, the increase per cent of expenditures for equipment was twice that for maintenance of way. Conducting transportation consequently declined from 59.46 per cent of classified expenses in 1895 to 55.179 per cent in 1900.

Attention is usually called to the dependence of railways for their prosperity upon the general business conditions and the activity of other industries. But the importance of railway expenditures in sustaining or inducing business activity is too often overlooked. These expenditures are essentially cumulative and progressive in their influence, not only upon those industries producing railway supplies, but upon the railways themselves. The expenditure of one year contributes to an increase in the gross income of the next year, and makes possible a greater surplus to be expended a year later, so that each increase of the railway for material and supplies contributes, by the expansion in trade which it creates, to bring a greater increase for the next year. Since the amount runs into the hundred millions, the influence of railway consumption is a powerful stimulus to business prosperity.

The geographical distribution of this increase brings out the prominence of the Southern Mississippi and the Northwestern States (V, VI, VII), both in the total and in the several different sources of expenditure. In the retrenchment of 1894 the Northwestern States (VII) were first in magnitude, but in the increase they were exceeded by several other groups. The South Atlantic States (IV) and Texas (IX), where the smallest decrease had taken place, seem not to have been affected by this fact so far as an increase in expenditure upon the return of prosperity was concerned. Thus, in general, railways in the Mississippi Valley, which had suffered most during the depression, as shown by the retrenchments, made the greatest increase in operating expenses in time of prosperity. It is safe to say that in this part of the country the most pronounced development of railways has taken place within recent years. This result can be traced to the activity of certain large railways operating in this part of the country.

Per Cent of Increase in Operating Expenses, 1900 over 1895 for Selected Roads.

Groups.	Railway.	Total.	Maintenance of		Conducting Transportation.
			Way.	Equipment.	
IV, V . .	Southern	83.72	56.50	158.08	76.56
V, VI . .	Illinois Central	75.18	116.57	69.12	63.24
V, VI . .	Louisville & Nashville	52.01	59.26	63.17	42.83
V, VI . .	Mobile & Ohio	103.94	84.28	70.41	138.27
VI, VII, .	C. B. & Q.	60.45	106.16	134.20	38.93
VI, VII, X	Great Northern	62.91	87.82	71.50	51.94

Increase in Operating Expenses, 1900 over 1895, by Groups and Sources of Expenditures.

Group.	Total Amount.	Total Per cent.	Maintenance of		Conducting Transportation. Per cent.	General Expenses. Per cent.
			Way. Per cent.	Equipment. Per cent.		
I	$10,547,762	18.59	23.29	32.54	14.76	1.81
II . . .	45,462,578	24.50	38.72	49.89	13.93	23.48
III . . .	37,727,934	32.46	57.60	68.66	18.02	2.71
IV . . .	8,872,768	31.06	40.68	61.99	21.16	1.22 [1]
V	24,612,173	46.27	47.70	71.49	41.28	25.78
VI . . .	58,306,080	45.93	82.89	80.79	30.54	4.41 [1]
VII . . .	9,893,023	41.69	68.93	71.99	28.00	12.58 [1]
VIII . .	20,361,815	33.39	29.09	58.10	30.36	17.86
IX . . .	7,279,823	21.66	16.78	29.89	22.82	10.02
X	12,644,140	31.41	21.52	53.60	31.61	20.95
Total . .	$235,708,096	32.48	46.70	59.22	22.72	9.53

[1] Decrease.

This increase in operating expenses cannot be explained by an increase in mileage, because the past decade was not prominent for railway construction. Increased traffic also is not sufficient explanation, though it may have made an addition to the expense necessary. The cost of operating a railway does not increase in direct proportion to additional traffic handled. Thus the largest increase in traffic density was in Groups X and III (the Pacific States and Middle West), but other groups largely surpassed these in increased expenditures for operation. The capitalization per mile of line in these groups (X and III) was very high in 1900, so that a good physical condition of the roadway and of equipment had undoubtedly resulted from large capital expenditures. Because of this favorable condition of the property, doubtless less expenditure for maintenance was necessary. In the Southern Mississippi and Central Northwestern States (V and VI) the increase in operating expenses was very great, though the increase in mileage and in traffic density was only about the average. But here capitalization per mile of line in 1900 was very much below the average for the whole country. It is safe to say that the increase in operating expenses of 1900 over 1895 was not the result of increased traffic handled, nor of new mileage put into operation, but depended more upon the physical condition of the property. This, at least, must be the explanation for Group V, where the railways have had poor road-bed and inefficient equipment. The replacement and renewal of this equipment

Increase Per cent, 1900 over 1894, in Mileage and Traffic Density, and Railway Capital per Mile of Line, 1900.

Group.	Mileage.	Ton-Miles per Mile of Line.	Capital per Mile of Line.
I	6.3	39.7	$ 61,246
II	5.5	55.1	112,255
III	4.2	88.7	64,729
IV	10.8	79.5	57,684
V	8.9	55.1	42,707
VI	8.2	60.8	47,087
VII	7.5	65.4	51,952
VIII	9.0	50.1	60,324
IX	13.5	55.7	44,378
X	11.3	90.1	78,806
Total	8.2	60.8	$61,490

by heavier and more efficient rolling stock, made necessary large expenditures for maintenance of way. To bring the railways operating between the Ohio River and the Gulf up to the standard in efficiency is especially imperative, because of the competition that these roads are undertaking with the large trunk lines for much of the western produce, which they are seeking to carry to the Gulf ports for export, instead of permitting it all to go to Atlantic ports.

During this time the total amount of compensation paid to railway employees increased from $445,508,261 in 1895 to $577,264,841 in 1900, or 29.6 per cent. As between the different classes of employees the smallest increase went to general officers and the largest increase to other officers, though the increase of this latter class was only 2.5 per cent of the total increase. The other classes to receive greatly increased compensation were trackmen, other employees, carpenters and shopmen.

This increased compensation going to general classes of employees was not due to greatly increased wages. The rate of daily wages during the period of depression showed no marked decrease. The investigations of the Department of Labor[1] showed that for 25 occupations, taking the wages for 1891 as 100, the decline was only 1.9 per cent from 1893 to 1894, and for 192 occupations only 1.26 per cent. The index number of wages for conductors decreased 4.8 per cent; locomotive engineers, 5.3 per cent; and laborers, 3 per cent. The per cent increase, 1900 over 1895, of the index number for 192 occupations was 5.5 per cent. But rates of daily wages are inadequate by themselves to show the effect of depression or prosperity upon labor, because they neglect the quantity of employment. The rate of daily wages should be qualified by a coefficient of the amount of employment. But the railways, perhaps more than any other industry, furnish steady employment throughout the year to the men employed, so that the greater part of the saving in the pay-roll was accomplished by a reduction in the number of employees, and the increase in compensation was due not nearly so much to increased average wages as to a large increase in the number of men employed. The fact that average yearly compensation for all employees was exactly the same in 1900 as in 1895 seems to lead to the same conclusion.

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[1] *Bulletin of the Department of Labor*, September, 1898, p. 668, and September, 1900, p. 914.

This increase in the number of employees can be shown best by comparing the years 1900 and 1894. The total increase was 238,045, or 30.5 per cent. The employees in maintenance of way increased 50.8 per cent; 65 per cent of the total increase was due to the increase in maintenance of way and of equipment of 42 per cent.

INCREASE AND AVERAGE YEARLY COMPENSATION PAID RAILWAY EMPLOYEES, 1900 OVER 1895.

Classes.	Total Increase.		Average Yearly Compensation.	
	Amount.	Per cent.	1895.	1900.
General officers	$922,734	7.6	$2,262	$2,676
Other officers	3,286,676	67.7	1,915	1,744
General office clerks . .	4,306,269	22.9	708	717
Station agents	1,871,872	11.2	575	587
Other station agents . .	7,166,300	18.6	522	508
Enginemen	11,222,500	28.4	1,138	1,183
Firemen	6,632,466	29.4	635	661
Conductors	6,380,842	26.8	957	1,004
Other trainmen	8,340,340	22.9	582	604
Machinists	5,200,531	29.4	639	698
Carpenters	7,182,472	34.3	589	603
Other shopmen	14,732,264	32.9	504	519
Section foremen	1,745,891	10.5	561	558
Other trackmen	21,150,401	41.9	325	316
Switchmen, flagmen . .	5,344,989	22.0	562	582
Telegraph operators . .	2,561,090	18.8	648	641
All other employees . . .	23,708,943	54.4	489	506
Total	$131,756,580	29.6	$567	$567

The contrast of the increase in the number of men engaged in maintenance and of those engaged in movement is shown by the relative number in each class per 1000 employees. Thus the rate for transportation decreased 27 and for general administration 5, while for maintenance of equipment the number was the same for both years; and for maintenance of way the increase was 43. Maintenance of property in 1900 had thus assumed, judging from the distribution of employees per 1000, relatively greater importance than the mere movement of traffic. The reason for this is found in the increased efficiency of the men engaged in conducting transportation as a result of improved roadway and better equipment which made heavier trains possible.

Geographically the largest increase took place in the Pacific and the Southern Mississippi States (X, V). The largest reduction in 1894 had been in the Middle West and in the Central Northwest (III, VI), but, in view of the special conditions found in these groups, it is safe to say that the permanent force was reduced most largely in Texas and in the Southern Mississippi States (IX, V). In these groups the largest increase also took place, except in the Pacific States (X), so that the railways in these geographical divisions had increased in 1900 over 1894 the number of employees from three and one-half to four times the reduction that had been made in 1894. The Northwestern States (VII) also showed an increase that was four-fold the decrease. New England (I), in contrast to the rest of the country, had a rate of increase smaller than the reduction that had been effected in 1894.

A more detailed analysis shows that the principal increase had taken place in certain definite classes. Thus trackmen increased 50 per cent, which was 32 per cent of the total increase. Other employees increased 43 per cent, or 16.9 per cent of the total; and shopmen 36 per cent, or 12 per cent of the total. The class of other officers increased 162 per cent, but this made up only 1.2 per cent of the total. In contrast to this was the decrease in general officers, and the small rate for section foremen, station agents, machinists and telegraph operators. Though the per cent increase in compensation was 29.6 per cent, and in the number of employees 30.5 per cent, it is important to note that the increase in the number of employees per 100 miles was only 19 per cent. This was an increase of less than 3 per cent over 1893 per 100 miles, while the absolute increase was

INCREASE IN NUMBER OF EMPLOYEES, 1900 OVER 1894.

Class of Work.	Increase.		Per cent of Total Increase.	Number per 1,000.		Increase.
	Number.	Per cent.		1894.	1900.	
Maintenance of way, etc. .	109,575	50.87	46.04	276	319	43
Maintenance of equipment	45,825	30.15	19.25	195	195	—
Conducting transportation	84,171	23.00	35.36	469	442	27[1]
General administration .	4,702	14.81	1.97	41	36	5[1]
Unclassified	6,228[1]	42.59	2.62[1]	19	8	11[1]
Total	238,045	30.53	100.00	1,000	1,000	—
Maintenance: way, structures, and equipment . .	155,400	42.30	65.29	471	514	43

[1] Decrease.

INCREASE IN NUMBER OF EMPLOYEES BY GROUPS AND BY CLASS OF WORK, 1900 OVER 1894.

Group.	Total Number.	Total Per cent.	Maintenance of		Conducting Transportation. Per cent.	General Administration. Per cent.
			Way. Per cent.	Equipment. Per cent.		
I	6,366	10.93	16.23	2.01[1]	12.46	10.15
II	38,690	18.52	29.24	22.56	13.83	.32
III	39,111	33.36	78.14	33.55	18.88	8.44[1]
IV	6,965	17.81	1.50	66.51	6.49	62.69
V	29,747	51.13	48.83	52.97	54.76	37.11
VI	58,692	40.76	75.41	17.08	25.09	1.19
VII	9,657	40.44	123.74	133.76	98.17	116.12
VIII . . .	16,724	26.33	34.42	24.17	32.44	21.25
IX	13,357	42.73	67.65	45.19	31.91	52.81
X	18,736	53.42	62.13	57.69	40.02	63.63
Total . . .	238,045	30.53	50.87	30.15	23.00	14.81

[1] Decrease.

PROPORTIONATE INCREASE OF EMPLOYEES BY CLASSES, 1900 OVER 1894.

Classes.	Increase.		Per cent of Total Increase.
	Number.	Per cent.	
General officers	341[1]	6.49[1]	.14[1]
Other officers	2,891	162.59	1.22
General office clerks	7,486	30.21	3.15
Station agents	3,411	12.10	1.43
Other station men	18,701	26.28	7.86
Enginemen	7,371	20.78	3.10
Firemen	7,803	21.50	3.28
Conductors	5,134	20.70	2.16
Other trainmen	10,857	17.12	4.56
Machinists	3,586	12.26	1.50
Carpenters	10,338	28.46	4.34
Other shopmen	30,414	36.06	12.78
Section foremen	3,425	11.55	1.44
Other trackmen	76,088	50.49	31.96
Switchmen, flagmen	7,570	17.52	3.17
Telegraph operators	3,073	13.90	1.29
All other employees	40,238	43.40	16.90
Total	238,045	30.53	100.00

[1] Decrease.

16.4 per cent. This indicates that the number of employees in proportion to the miles of railway increased less than one-fifth as much as the per cent of absolute increase. This taken in connection with the increase in traffic shows that the rate of increase in employment has really been very small, and that this itself may be due to the very large increase in several classes, notably among trackmen.[1]

Among the classes of the more skilled the number of men per 100 miles in 1900 had not reached the number of 1893. Thus in conducting transportation the number of men per 100 miles of line had actually decreased or remained at the same level. The only class to show any increase was the unskilled and a slight increase in general administration. Where improvements in machinery entered only slightly the relative amount of employment increased greatly over even the active year 1893, but so far as mere movement and work in the shops were concerned a smaller proportionate number of men were employed.

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[1] In 1893 the number of employees per 100 miles of line was 515; in 1894, 444; and in 1900, 529. There was thus an increase of 14 in 1900 over 1893. As between the several classes of employees, trackmen increased 12, other shopmen 5, while enginemen and firemen decreased 1 each, other trainmen 4, and machinists and carpenters each 1 in 1900 over 1893. With this large proportionate increase in trackmen and other shopmen the employees per 100 miles would have been less in 1900 than in 1893.

The special line of work in which the railways of different parts of the country have made most pronounced improvements is apparent from an examination by geographical divisions of the increase in the number of employees in different classes of labor. Thus in New England (I) the development took place in general administration and in maintenance of way, together with greater attention paid to station service. In the Middle States (II) the development has been among shopmen and trackmen, showing the policy of equipment and roadway improvement, and the growth of transportation service shown by the increase in enginemen

INCREASE PER CENT IN THE NUMBER OF EMPLOYEES BY GROUPS AND BY CLASSES, 1900 OVER 1894.

Class.	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.
General officers . .	28.8[1]	23.4[1]	19.2[1]	18.0	6.9	2.1	6.7[1]	13.8	13.7	29.0
Other officers . . .	93.5	37.1	177.9	1,106.8	335.2	109.6	158.3	180.0	121.5	195.0
General office clerks	31.3	23.4	18.1	51.1	39.0	20.5	68.1	28.5	63.5	75.9
Station agents . . .	5.2	18.4	4.2	8.3	25.5	8.0	6.7	14.5	18.7	14.0
Other station men .	30.9	12.2	23.8	25.4	55.9	31.7	38.7	33.6	27.3	38.3
Enginemen	6.8	12.2	23.2	14.0	38.3	22.9	24.5	25.3	34.7	37.3
Firemen	4.1	15.4	24.4	11.8	34.0	22.0	30.6	28.8	40.1	32.3
Conductors	4.2	15.4	18.0	7.7	42.0	21.9	39.1	26.4	33.6	50.8
Other trainmen . .	3.6	8.1	22.4	3.4[1]	34.1	23.4	45.8	32.0	32.9	41.4
Machinists	8.3[1]	11.0	20.5	20.4	22.6	1.1	19.6[1]	28.3	32.1	49.4
Carpenters	8.6[1]	18.4	25.2	54.9	67.5	39.5	6.0	18.1	58.0	26.1
Other shopmen . .	14.3	30.8	46.3	90.7	52.5	24.8	13.1	26.3	19.7	80.3
Section foremen . .	12.7	12.3	10.5	1.9	25.3	2.7	10.7	13.8	19.1	28.3
Other trackmen . .	17.7	33.1	58.0	8.3	52.2	94.9	85.3	31.0	61.8	47.8
Switchmen, flagmen .	1.3	12.5	14.0	10.6	48.1	22.8	25.0	19.1	23.7	47.3
Telegraph operators .	22.4	3.7[1]	12.0	17.4	42.3	23.3	39.7	18.3	12.2	42.5
All other employees .	.5	21.6	64.3	15.7[1]	103.6	77.5	47.9	21.7	59.5	86.9
Total	10.9	18.5	33.4	17.8	51.1	40.7	40.4	26.3	42.7	53.4

[1] Decrease.

and conductors. This improvement of the roadway and equipment is also shown in the Middle West (III), and with it the increased service in movement made necessary by the great volume of traffic. Equipment, to the exclusion of nearly everything else, received the greatest attention in the South Atlantic States (IV), while in the Southern Mississippi States (V) attention was paid to roadway as well as to equipment. In the Northwest (VI, VII) the chief development was shown in roadway and in movement, and a smaller increase in betterment of equipment. In what may be called the Central West (VIII) is shown to have attended most to movement and roadway, administration and station service. Movement and roadway were the chief items in Texas (IX), and in the Pacific States (X) the largest increase was in men employed in the shops and in moving traffic. The department of general administration shows remarkable variations. The class of general officers increased only slightly in some of the groups, while in others there was a decrease. On the other hand, the class of other officers, though small in absolute numbers, increased out of all proportion to the other classes. This was due to the small number, so that a slight change was represented by a large percentage. The effect of consolidations also decreased the number of general officers and filled their places with other officers, or retained the same men who were then no longer classed as general officers.

This gives an idea of the particular departments of the transportation service which the railways of the different sections felt it important to improve, in order to increase the earning power of the property and to offer better service to the public.

The principal increase in expenditure and in employment was found to have been for maintenance and renewal of roadway and of equipment. The expenditures made for the movement of traffic increased in much smaller proportion, so that the number of men per 100 miles engaged in movement was smaller in 1900 than in 1893. The effect of renewals and repairs can be shown by comparing the number of employees per 100 miles and the ton-miles representing the work accomplished. For this purpose the former period of prosperity represented by 1893 is compared with 1900.

Between these two years the increase per cent in the total number of employees per 100 miles of line was 2.7, but the increase in ton-miles per employee was 29.9 per cent. The increase in traffic handled was thus more than ten-fold the increase in the number of employees. Enginemen decreased 4 per cent per 100 miles, but the ton-miles per engineman increased 37 per cent. About the same relative proportions were shown by firemen. Other trainmen, however, decreased per 100 miles 9 per cent, but the ton-miles per man increased 48.6 per cent. This greater efficiency of trainmen would be shown more accurately if the men engaged in movement of freight were separately enumerated. The increased work performed by the handlers of freight is no doubt in many cases several hundred per cent greater than in 1893, as the result of the increased weight and high speed of freight trains, which have also shortened the hours of labor. This speed and carrying capacity are the result of the many improvements in equipment and betterment of roadway, much of which has been charged to operating expenses.

INCREASE PER CENT OF EMPLOYEES PER 100 MILES OF LINE AND OF TON-MILEAGE, 1900 OVER 1893.

Classes.	Per 100 Miles. Per cent.	Ton-Miles. Per cent.
All employees	2.7	29.9
Enginemen	4.3[1]	37.0
Firemen	4.2[1]	38.4
Conductors	0.0	38.9
Other trainmen	9.3[1]	48.6

[1] Decrease.

In view of these changes in expenditure and in employment, first by a reduction and then by a large increase, it may be inquired as to the effects upon the safety of railway operation. A comparison thus of the fatalities among railway employees and coal miners may be taken as representing the degree of danger to which railway employees are exposed. In general railroading is found to be more dangerous than the mining of bituminous coal in Pennsylvania, but much less so than the mining of anthracite coal. Taking the total accidents in coal mining in comparison with those on the railways the period here covered naturally falls into two groups. From 1889 to 1893 inclusive, the fatal accidents per million employees on railways were proportionally higher than those in mining coal, and the years since 1893, during which time the accidents in mining coal have increased until they are considerably higher than the accidents on railways, changing place thus with the railways as to the dangerous nature of the occupation.

The largest proportion of fatal accidents occurred in 1891, and then slightly decreased to the year 1893, when a sudden drop followed in 1894. This low proportion continued in both mining and on the railways until 1899, when a rise began. The difficulty, however, with such a comparison on the basis of numbers alone is that the condition of business is not taken into account. Thus in considering the fatal accidents on the railways the density of traffic should be taken into account, and not alone the number of men employed. The danger on a railroad, it is reasonable to expect, other things being equal, increases largely in proportion as the traffic increases.

Thus taking the accidents in relation to the traffic density, it is shown that with an increase in traffic handled there was an increase in fatalities, except for the years 1896-99. With the falling off in traffic in 1894 the number of ton-miles per mile of line showed a decided increase per fatal accident, indicating a falling off in accidents. But with the increase in traffic beginning with 1896, the rate of fatalities seems not to have increased, but really to have decreased. The reason for this can partly be explained by the introduction of safety appliances on the greater number of cars and of signalling apparatus. The result of better equipment was that the men engaged in movement handled more freight per man, so that fewer men in proportion to the traffic were in a position to be exposed to the danger. Thus the traffic density in 1900 was 33.5 per cent greater than in 1893, but there were 42.5 per cent more ton-miles per mile of line to each accident during this time. This shows that the danger connected with the occupation did not increase by a considerable margin in the same proportion as the traffic handled.

FATAL ACCIDENTS TO EMPLOYEES, RAILWAYS AND COAL MINES, 1889–1900.

Year.	Pennsylvania Coal Mines.[1] Per Million Employees.			Railways.	
	Bituminous.	Anthracite.	Total.	Per Million Employees.	Ton-Miles per Mile of Line per Fatal Accident.
1889	1,888	3,226	2,557	2,815	227
1890	2,183	3,463	2,823	3,272	199
1891	3,183	3,463	3,323	3,392	189
1892	1,688	3,051	2,369	3,110	213
1893	1,640	3,224	2,432	3,123	202
1894	1,441	3,144	2,292	2,341	250
1895	1,825	2,939	2,377	2,307	265
1896	2,136	2,354	2,245	2,253	281
1897	1,723	2,836	2,279	2,069	306
1898	2,255	2,886	2,570	2,240	315
1899	2,821	3,286	3,053	2,382	298
1900	2,513	2,859	2,686	2,508	288

[1] Pennsylvania Bureau of Mines, Report of 1899, pp. x, xiv; 1900, pp. xxxiii, xxxv.

With the prostration of business in 1894 and the consequent decline in railway earnings, the chief retrenchment in operating expenses was effected in the maintenance departments which furnished more than one-half the reduction and more than two-thirds of the labor discharged. The effect must have been a failure to make the necessary repairs and renewals to meet ordinary deterioration. Such reductions consequently were not real retrenchments, but the saving thus made was merely temporary and was really borrowing capital invested in the property. If the earning capacity of the plant as a whole was not permanently to be impaired, such a loan had to be returned to the property at some early period.

The return of prosperity brought greatly increased earnings, a large part of which were expended for operation. Though much of these increased expenditures were necessary because of the growth of business, the larger part were evidently not necessary to handle the existing traffic. They were also not made only for the purpose of bringing the railways up to the standard of the former period of prosperity, but greatly to improve transportation facilities in order to handle traffic with the greatest economy. It was thus that a system of real retrenchment was in progress, so that the efficiency of labor engaged in movement was greatly increased over former prosperous times, while the danger of the occupation even decreased. The economies suddenly forced upon managers by the depression of 1894–97 may in this way have been made permanent.

REVIEWS AND MISCELLANY.

NOTES ON VITAL STATISTICS.

Defects in British Census-taking.

A short paper by Dr. J. R. Kaye on the "Certification and Registration of Death," in *Public Health* for October, 1901, criticises the British system of collecting mortality statistics in the following respects. The Registration Act of 1874, which is still in force, requires a certificate of death from all medical men in attendance upon deceased persons and from coroners in all cases of sudden, violent and suspicious deaths. Although this act greatly improved the conditions which obtained under the system of voluntary medical certification in operation since 1837, it left unaccounted for a certain proportion of deaths which occur without medical care or coroner's inquest. The ratio of these uncertified deaths is decreasing steadily, having fallen from 4.1 per cent in 1881 to 1.85 per cent in 1899; but the error is still unfortunate. The second flaw in the registration system is the lack of medical certificates of still births, the certificate of any midwife being accepted for the burial of still-born children. The third source of error in the mortality statistics arises from the imperfect returns of the causes of deaths by medical men and, still more, by coroners. The use of such vague terms as catarrh, senile decay, asphyxia, etc., the reporting of several causes for a single death, without indicating their relative importance, and the deliberate suppression of such causes as alcoholism and syphilis, are mentioned in particular. Dr. Kaye quotes the recent verdict of a coroner in Leeds, which was "death from strangulation, but no evidence to show the child had ever lived." He urges the medical certification of deaths, including still-births, on a compulsory form of certificate, and the investigation by a public official of all deaths not so certified.

A companion paper to that just reviewed is a criticism of the British census system entitled "The Case for Census Reform," published by G. H. Ryan in the *Journal of the Institute of Actuaries* for January, 1902. The author quotes extensively from the Report of the Census Committee appointed by the Government in 1890, as well as from other sources, and comments on existing conditions with some severity. His first point is the need for a quinquennial census in order to furnish data for sanitary and financial calculations in the smaller registration districts, where changes in the rate of increase make deductions from the ten-year census untrustworthy. He points out that the more progressive nations, France, Germany, Sweden, and some of the Australian colonies have already adopted the more frequent census. Mr. Ryan's next argument, for a permanent census office, sounds somewhat familiar to Americans at this time; but it is pleasant to find that the generous equipment of the American census bureau and the employment of expert assistance of high character are quoted as examples for the British government. In connection with the presentation of the data collected the omission of the returns of the population at integral years of age (quinquennial totals only being given from 5 years to 25 years, and decennial totals from 25 to 85), is justly criticised. Finally the author strongly urges the examination of the Hollerith Electrical Tabulating Machine used in Russia and the United States, in connection with recent censuses. Anyone interested in this machine will find an interesting account of its work in a paper on "Mechanical Tabulation of the Statistics of Agriculture in the Twelfth Census of the United States," read by H. T. Newcomb before the American Association for the Advancement of Science at Denver in August, 1901, and since published in pamphlet form.

The Canadian Census.

The *Economic Journal* for December, 1901, contains a review of the recent Canadian census by Professor John Davidson, of the University of New Brunswick. The author notes the widespread popular disappointment over the reduced rate of increase during the last decade (nine per cent, against eleven per cent in the previous decade). He believes, however, that the exodus to the United States which has held the Dominion population down has already begun to be balanced by an influx of Americans to take up Canadian lands. An analysis of the figures shows that while Prince Edward Island has actually lost in population, and Nova Scotia, New Brunswick and Ontario have increased but slightly, British Columbia has nearly doubled, and the Northwest Territories have more than doubled their totals. Besides the gross population, the number of families and the number of dwellings in the various districts have been already published. The number of persons to a family shows a slight decrease, from 5.2 to 5.1, for the whole Dominion; the 1901 value in the eight provinces ranges from 4.5 in Ontario to 5.5 in Prince Edward Island.

The Law of Averages in Criminology.

In *L'Economiste Français* for October 26, 1901, is an interesting summary of the report of the Keeper of Seals on the crimes and misdemeanors in the French Republic during the year 1899. Crimes against the person occurred in the same number as in 1898; but crimes against property showed a marked augmentation, due to an increase of thirteen per cent in grand larceny and an increase of twenty per cent in incendiarism. The classification of the criminals according to sex, age, and civil and social condition gives results almost identical with those of the preceding year, and exhibits in a very striking manner the constancy of the sociological laws controlling crime.

Classes of accused persons.	Percentage of all accused persons.		Classes of accused persons.	Percentage of all accused persons.	
	1899	1898		1899	1898
Sex:			Birth:		
Males	86	83	French	93	94
Females	14	17	Foreign	7	6
Age:			Domicile:		
Under 21 years	19	18	Rural	36	37
21–40	55	56	Urban	49	49
41–60	21	22	None	15	14
Over 60 years	5	4	Literacy:		
Civil Condition:			Completely illiterate	15	13
Single	60	59	Able to read and write	82	83
Married	34	35	Having superior education	3	4
Widowed	6	6			

The misdemeanors show a marked falling off in arrests for vagabondage and mendicancy, due to a ministerial circular of May 2, 1899, urging leniency toward offenders of this class, and a decrease in simple theft, with an increase in assault and battery.

Mental Pathology and Alcoholism.

A paper on *Idiot and Imbecile Children*, published by Dr. Louise G. Robinovitch in the *Journal of Mental Pathology*, for July, 1901, p. 86, contains a table of statistics with regard to 100 idiotic and imbecile children admitted to the Ste. Anne Asylum, Paris. In the families of these 100 children, 155 other children had been born, of whom 53 had died and 7 miscarried, while 95 were living at home, of whom 72 only were in good health. In the 100 families, both parents were "alcoholic" in one case, the mother was "alcoholic" in one case and the father in 52 cases. The author concludes that "Alcoholism of the parents not only causes idiocy and imbecility of the offspring, but also acts as a strong factor in reducing the birth rate and increasing the death rate." This may be true, but it requires other proof than the statistics quoted. In the first place, the term "alcoholic" is indefinite; according to some definitions, fifty per cent of non-idiotic children of the poorer classes might show 54 per cent of "alcoholic" parents. In the second place, alcoholism is associated with poverty and poverty with poor food, bad air, etc., so that any relation which exists may be an indirect one. Finally, according to biological theories of heredity, the alcoholism of the parent may not cause the idiocy of the child, but both may be the results of defect in the original germ plasm from which both child and parent are derived.

A paper by Dr. J. Morel in the *Journal of Mental Pathology* for September, 1901, contains some similar statistics on the contributory causes of pauperism and crime under the caption, "On the Prophylaxis and Treatment of the Recidivist Criminal." It seems reasonable to suppose that the laws of criminology can best be studied in the class of persons mentioned, as the character of the occasional criminal should be intensified in the habitual offender. Dr. Morel gives the statistics of 158 recidivists sentenced for ten or more years; of this number, 55 had "alcoholic" parents, 37 had members of their family serving sentences, 30 had no education, and 52 had only rudimentary education. Again, the lack of comparative figures for the non-criminal population of the same social rank and the vague nature of the basal information (except in the case of relatives under sentence), make any conclusions hazardous.

Vital Statistics of France for 1900.

An official report on the movement of population in France during 1900 is published in the *Journal de la Société de Statistique de Paris* for January, 1902. The discouraging conclusions as to decreasing population drawn from the last census are confirmed by this document. The total number of births fell in 1900 to 2.24 per 100 of the legal population, the lowest figure recorded since the beginning of the century. The most hopeful feature of the report consists in an increased marriage rate, the figure, 1.54 newly married persons per 100 population, being higher than any which has been noted since 1876.

A New Theory to Account for Decreasing Birth Rates.

M. G. Cauderlier contributes a striking and important paper on "La Loi qui règle les Naissances" to the *Journal de la Société de Statistique de Paris* for January and February. His thesis is that the birth rate, like the marriage rate, is directly controlled by economic conditions, in particular as such conditions affect emigration; and he takes issue with Bertillon, Leroy-Beaulieu and Arsène Dumont, who hold the main factor to be the complexity of civilization, and the increase of social ambition. Cauderlier first takes up the successive changes in various European countries, and shows that, while in general the natality rate rose from 1840 to 1875 and fell from 1875 to 1895, the fecundity rate was much more constant. In England and Belgium it remained stationary; in France it fell from 1867 to 1872, in consequence of the antagonism with Prussia and the war of 1870, and again from 1884 to 1889 in consequence of the invasion of the phylloxera and financial crises; in Wurtemburg it fell from 1864 to 1870, thanks to three wars and the heavy expenses connected with the formation of the German Empire; in Holland it remained constant from 1857 to 1878, and then rose till 1885, corresponding with an enormous increase in foreign trade; in Prussia it remained constant from 1859 to 1883, and then rose with the rapid development of industry and commerce. The author concludes, therefore, that the fecundity is constant for the same region, except for economic changes. M. Cauderlier then considers the geographical difference in the birth rate in various parts of Europe. The maximum is found in the most fertile and industrial regions of Russia, and the ratio of births decreases in proportion as one passes from this center.

Assuming the normal fecundity to be a constant, the author explains a decreased natality in various regions, such as Belgium, England and France, by a combination of the five following factors, — a decrease in the number of marriages, an improvement in sanitation, tending to increase the proportion of the population below marriageable age, an increase in the mean age of marriage, an increased centralization of population in cities, where "the natural coefficients of fecundity" are diminished, and poor economic conditions directly decreasing fecundity. The next section of M. Cauderlier's paper deals with the periodic variations in fecundity in the various departments of France, and shows a marked relation between this value and economic conditions. Most striking, however, is his tabulation of the illegitimate fecundity (ratio of illegitimate children to single women), a quantity which would naturally be freer from the effect of increased restraint during periods of financial depression than any of the rates ordinarily used. In spite of this fact the relation to economic conditions is marked as, shown by the following table: —

Period.	Conditions.	Number of Departments with Illegitimate Fecundity Rate		
		Increasing by over 5 per 10,000	Stationary.	Decreasing by over 5 per 10,000
1852–56 to 1857–61 . .	Prosperity .	44	22	15
1857–61 to 1862–66 . .	Prosperity .	37	24	20
1862–66 to 1867–71 . .	Panic . . .	21	20	43
1867–71 to 1872–76 . .	Prosperity .	32	29	23
1872–76 to 1877–81 . .	Panic . . .	15	23	46
1877–81 to 1882–86 . .	Slow recovery	41	19	24
1882–86 to 1887–91 . .	Panic . . .	19	24	41
1887–91 to 1892–96 . .	Slow recovery	42	26	16

Having thus shown that the restraint of parents is insufficient to account for all the facts, the author studies the various departments in detail in order to find some other cause. He shows that they may be divided into five groups — those in which the fecundity has not varied since 1857; those in which the fecundity showed a fall due to the war of 1870–71, but was constant before that period, and has been constant at a lower level since; those in which the economic conditions following the war proved beneficial and which show a constantly higher rate afterward than before; those in which a constant rate before the war has been replaced by a steadily falling one; and those in which the fecundity has been steadily decreasing since 1857. The last two classes of departments must furnish, of course, the key to the situation. M. Cauderlier studies in each of them the ratio of males between the ages of 15 and 20 to the number between 25 and 30, and shows that there exists a constant difference between the two age groups far too great to be accounted for by any ordinary mortality, and pointing clearly to an active emigration of young men. For example, in the extreme case of the department of Landes there were in 1891, 16,624 males of the first age group and 7357 of the second. The author believes, then, that the decreased fecundity is mainly due to the removal from the rural districts of a large proportion of young men, including the most vigorous, active and healthy individuals. This operates, not only directly by the removal of young husbands, but indirectly by a reversal of the process of natural selection, leads to a constant deterioration of the race with a corresponding fall in the rate of fecundity. The introduction of this biological factor to explain a declining birth rate is a new and significant contribution to the problem. At the same time it appears to the reviewer that the truth lies somewhere between the positions occupied by M. Arsène Dumont and M. Cauderlier, — for this reason: Emigration to the cities accounts for a decreased fecundity in rural districts, but it does not account for the decreasing population of France, as a whole. Why is not the emigration of the strongest young males from the country to the city followed by an increased urban fecundity sufficient to balance the rural decrease? Not because the purely biological conditions of city life favor a low birth rate, for the reverse is the case. As M. Cauderlier himself says, "*la faible natalité des grandes villes est due à ce que ces dernières augmentent les besoins de la vie, en fournissant les moyens d'y satisfaire.*" That is, the author is after all compelled to call in the factor of self-restraint, due to the complex needs of civilization, to account for the larger features of the problem. Nevertheless, this paper, like all M. Cauderlier's work, is admirably thorough and scientific, and his recognition of biological laws is most important. No one has contributed more ably than this author to the progress of vital statistics during the last few years.

C.-E. A. WINSLOW.

STATISTICS OF DISEASES.

Statistics of Typhoid Epidemics.

Dr. Schüder, of Koch's laboratory at Berlin, attempts a statistical estimate of the relative importance of various vehicles of typhoid infection in a paper, "Zur Aetiologie des Typhus," in the *Zeitschrift für Hygiene und Infectionskrankheiten*, vol. xxxviii, p. 343. He has collected reports of epidemics of various size, and by including 12 single cases where personal contagion was excluded, brings up his total to 650. Of these, 377 were in Germany, 140 in England, 66 in France, and 25 in America. Tabulating the epidemics by assigned causes, it appears that 70.8 per cent were supposed to be due to water supply, 17.0 per cent to milk supply, and 3.5 per cent to other foods. The value of such a massing of incongruous statistics in which large and small epidemics are given equal weight, may fairly be doubted. It is also quite impossible to apply laws derived from the study of epidemics to the distribution of a disease as a whole. Besides sharp epidemic outbreaks arising from the transmission of infection to a large number of people at the same time by the same medium, typhoid fever is propagated more insidiously, in a fashion for which the reviewer has elsewhere suggested the term "prosodemic," passing from person to person by different routes of infection. Obviously water supply furnishes an exceptional opportunity for the first mode of infection, and will be of much less importance in the second.

Diphtheria Statistics.

Some valuable diphtheria statistics, "Diphtherie–statistik des Stadtkrankenhauses zu Dresden 1849–1898," are published by Dr. F. Förster as a *Sonderabdruck aus der Festschrift zum fünfzigjährigen Bestehen des Stadtkrankenhauses zu Dresden.* The table of monthly distribution of cases exhibits the usual relations, as shown by the following summary :

Cases of Diphtheria Admitted to the Dresden City Hospital, 1849–98.

January	210	July	124
February	143	August	89
March	157	September	171
April	133	October	169
May	143	November	194
June	127	December	177

During the period 1849–94 there were 1403 cases of diphtheria with 316 deaths, a fatality rate of 22.5 per cent. The first injection of anti-toxin was on September 5, 1894; and in the four years, 1895–98, there have been 434 cases and 35 deaths, a rate of 8.1 per cent. It would be perhaps fair to compare the rate for 1895–98 with that for the corresponding period immediately preceding. It appears from Dr. Förster's table that there were 336 cases and 115 deaths in the four years, 1891–94, giving a rate of 34.2 per cent, which makes the results of the anti-toxin treatment still more striking.

Trichinosis in Germany.

Bulletin No. 30 of the Bureau of Animal Industry, U. S. Department of Agriculture, is entitled "Trichinosis in Germany," and includes a very elaborate analysis of the German statistics of this disease. The principal part of the report by Dr. C. W. Stiles is devoted to a detailed review of individual cases on record during the period 1881–98. The first fact brought out is a steady decrease in the prevalence of trichinosis, due to the education of the public and the official inspection of pork products; and not at all connected with the importation or non-importation of American meat. The following compiled table shows the main facts: —

Period.	American Pork.	Cases of Trichinosis.	Deaths.	Cases per Annum.
1881–82	Admitted.	1,193	17	596
1883–91	Excluded.	4,093	274	455
1892–98	Admitted.	1,043	27	149

The second point emphasized is that of the 6329 cases recorded between 1881 and 1898, 3388 were traced to pork, which had passed the usual microscopic inspection, and in only 874 cases was it definitely shown that uninspected meat was the cause. Thus it appears that even the elaborate German system furnishes no absolute safeguard against trichinosis.

Vaccination Statistics.

In the discussion of a paper, by Dr. J. F. J. Sykes, on "Small-pox in London," published in *Public Health* for January, 1902, is a table of vaccination statistics furnished by Dr. W. A. Bond, which is worth citing. It furnishes a comparison of the fatality among the vaccinated and unvaccinated in certain large English towns, and, assuming that it is correctly compiled, furnishes valuable evidence of the protective effect of vaccination. It is free from the error introduced by a too strict interpretation of what constitutes a successful vaccination, as it is stated that the "vaccinated include all cases that had *any* evidence of vaccination." In the second place the age limit is a useful one, as it makes it unnecessary to consider the lapse of time since vaccination was effected. In the subjoined table the figures for the smaller towns given by Dr. Bond are omitted: —

SMALL-POX IN PERSONS UNDER TEN YEARS OF AGE.

Town.	Period.	Vaccinated.			Unvaccinated.		
		Cases.	Deaths.	Rate.	Cases.	Deaths.	Rate.
London	1891-1900	125	0	0.0	672	153	22.8
Sheffield	1887-88	353	6	1.7	228	100	43.9
Dewsbury Union . .	1891-92	44	1	2.2	174	56	32.1
Warrington	1892-93	33	2	6.0	32	12	37.5
Gloucester	1892-93	26	1	3.8	680	279	41.0
Manchester	1892-93	11	0	0.0	36	7	19.4
Bradford	1893	17	0	0.0	57	23	40.3

Prevalence of Phthisis.

Dr. W. H. Symons discusses "The Distribution of Phthisis," in *Public Health*, for March, 1902, and suggests several interesting questions. He first tabulates the mortality in England by counties for the periods 1861–70 and 1892–99, showing widely variable rates, with a pretty constant decrease, when the two periods are compared. Thus the highest rates in the second period are in London, 177 per 100,000 population, a decrease of 62.3 per cent; Northumberland, 172 per 100,000, a decrease of 69.1 per cent; and Lancashire, 149, a decrease of 53.1 per cent. The lowest rates are in Rutland, 78 per 100,000, a decrease of 41.3 per cent; Westmoreland, 89 per 100,000, a decrease of 36.4 per cent; and Monmouthshire, 99 per 100,000, a decrease of 47.6. The relation between the sexes in the various counties varies markedly. For England and Wales the male rate in 1895–99 was 153 per 100,000, and the female rate, 115; in London the male rate was 225 and the female rate 132; and for Warwickshire the figures were 172 and 99. On the other hand, in Lincolnshire, Cumberland, Dorset, Monmouthshire, and South Wales the female death rate exceeded that recorded for males. Finally, Dr. Symons gives some statistics of the house-to-house distribution of tuberculosis in the city of Bath, showing the greater incidence in certain houses, to be expected from the infectious character of the disease.

C.-E. A. WINSLOW.

RECENT SANITARY REPORTS.

Common Fallacies in Municipal Statistics.

The *Twenty-fourth Annual Report of the Health Commissioner of the city of St. Louis*, for the year ending March 31, 1901, is a bulky document containing considerable statistical material. Although the total number of deaths in 1900 was 175 less than in 1899, the death rate calculated on the census population of 575,200 was 17.1, against 15.4 in 1899, calculated on an estimated population of 647,000. It is stated in a foot-note that "The figures of population given above appear in a number of instances — except those for the United States census years — to be little more than guess work, and the mortality percentage based upon them open to question." This is true for many other cities whose officials are less frank than those of St. Louis. The Commissioner brings out one important point in connection with tuberculosis, as follows: "It is well known that a large proportion of the poor of our city carry a small life insurance policy, generally just enough to provide for funeral expenses. If tuberculosis be ascribed as the cause of death, the policies in many of these companies are wholly, or in part, vitiated; it is at once apparent how important the word 'tuberculosis' becomes to many people. Attempts to influence physicians, even by direct bribes, not to use the word 'tuberculosis' in the death certificate are of common occurrence; the potent argument of 'no insurance, no doctor's fees' is sufficient to prompt the majority of physicians to find other causes of death." The antitoxin statistics are important, but, as in the case of many other cities, they suggest one question. In the six years, 1889–94, there were in St. Louis 5716 cases of diphtheria and croup, and 2027 deaths, giving a fatality of 35.46 per cent; in the six years, 1895–1900, there were 13,593 cases and 2131 deaths, with a rate of 15.67 per cent. That is, the reduced fatality rate is accompanied as in many other cities where, approximately these two periods have been compared, by a great increase in the number of reported cases. Without in any way questioning the general fact of a great reduction of fatality, due to antitoxin, it seems probable to the reviewer that a certain part of this increase in reported cases is not real, but is caused by a greater anxiety to report the disease and secure the benefits of the new treatment. Of much more significance than the general fatality rate is the ratio of only 8.78 deaths to 100 cases among the 2347 persons known to have been treated with antitoxin, furnished by the health department itself, during the last period. This is very striking. The latter part of the report contains a large amount of material which is scarcely worth printing in detail. The analysis of all the individual causes of death, by months and ages, the tables of decedents received from outside the city, the elaborate tables of cases treated at the city dispensary, the city hospital, the insane asylum and the female hospital would be accessible to all who might care to consult them if kept on file at the health office, and they unnecessarily cumber the printed report.

Zymotic Diseases and the School Term.

The *Annual Report of the Board of Health of Cambridge, Mass.*, for 1901 contains, as usual, a model presentation of the statistics of the zymotic diseases. The estimate of population upon which the rates are calculated is obtained, as stated, from the State Board of Health. It would be of great service in increasing the comparability of vital statistics if sanitary authorities in general would thus refer their population estimates to the State boards. The tables of reported cases of the infectious diseases by weeks are valuable. The following table, extracted from two of those in the report, indicates the effect of the opening of the school term on diphtheria and measles: —

	Week ending —							
	Aug. 3.	Aug. 10.	Aug. 17.	Aug. 24.	Aug. 31.	Sept. 7.	Sept. 14.	Sept. 21.
Cases of Diphtheria	15	9	3	3	7	5	3	2
Cases of Measles	4	0	2	0	0	0	0	0

	Week ending —								
	Sept. 28.	Oct. 5.	Oct. 12.	Oct. 19.	Oct. 26.	Nov. 2.	Nov. 9.	Nov. 16.	Nov. 23.
Cases of Diphtheria . . .	5	9	18	10	19	15	15	14	14
Cases of Measles	0	1	8	2	11	7	12	7	3

The fact that the number of scarlet fever cases reported per 1000 population was 1.07 in 1901 against 1.91 in 1900, while the fatality rate rose from 5.11 to 7.91, and the fact that the number of cases of diphtheria reported fell from 10.00 to 6.58 per 1000, while the fatality rate rose from 7.78 to 9.59, apparently indicates more imperfect reporting in 1901 than in 1900.

The *Twelfth Annual Report of the Board of Health of the City of Fitchburg, Mass.*, for 1901, is a somewhat less modern document than the one just reviewed. Valuable tables are given showing the monthly prevalence of diphtheria, scarlet fever, and typhoid fever for twelve years, which again bring out the fall increase usually attributed to school contagion.

REPORTED CASES OF SCARLET FEVER AND DIPHTHERIA IN FITCHBURG, 1890–91.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Scarlet Fever	52	70	56	70	56	36	34	31	34	63	66	56
Diphtheria	34	32	22	35	33	15	23	11	39	55	76	46

The tables following, in which the quarterly percentages of the annual totals of these diseases are calculated out to the second place of decimals, are not very significant. The wisdom of devoting three pages of text and tables to the proportion of houses in which cases of infectious disease occurred, in which the plumbing was defective, may reasonably be doubted, in view of the well-known fact, recently expressed by Mr. A. L. Webster, when he said that, in his opinion, fully 80 per cent of all the houses in New York would show defective plumbing, if severely tested. The usual old-time graphic chart of the principal causes of death is given, with the zymotic diseases (cholera infantum, "membranous croup," typhoid fever, diphtheria, and "la grippe") in red, and the other diseases (including pneumonia, consumption, peritonitis, gastro-enteritis, septicæmia, and diarrhœa) in black. The causes of death which rank fourth and fifth in importance are infantile debility and senile debility, indicating great carelessness in the returns of mortality.

Typhoid Fever and Polluted Water.

The *Annual Report of the Department of Health of Newark, N. J.*, for 1900, contains a significant table of the typhoid fever death rate in Newark and Jersey City in connection with the water supply of those cities.

TYPHOID FEVER DEATHS PER 100,000 INHABITANTS.

Year.	Jersey City.	Water Supply.	Newark.	Water Supply.
1889	——	A	90.0	A
1890	90.8	A	62.8	A
1891	94.5	A	96.4	A
1892	52.4	A	42.1	B
1893	59.8	A	22.2	B
1894	66.1	A	16.6	B
1895	73.6	A	23.1	B
1896	60.9	A and B	20.9	B
1897	21.4	B and C	14.4	B
1898	36.3	B and C	13.2	B
1899	15.0	B and C	27.5	B
1900	21.3	D	20.0	B

A = Passaic River at Belleville (below Paterson and Passaic).
B = Pequannock River.
C = Passaic River at Paterson Falls (above Paterson and Passaic).
D = " " " Little " " " " "

A Triumph of Sanitation.

The *Report of Vital Statistics of the city of Havana*, for the year 1901, made to the military governor by Major W. C. Gorgas, surgeon, U. S. A., and chief sanitary officer, is one of the few fruits of the Spanish War of which Americans can afford to feel proud. The splendid sanitary work of the United States army in Cuba and Porto Rico forms a bright contrast to the unfortunate conditions in the Asiatic islands. The present report gives evidence of one of the most remarkable revolutions ever effected in the history of sanitary science. The general death rate for the city in 1901 is given as 22.11, a very creditable one. It is hardly fair, however, to compare this rate, as Major Gorgas does in one place, with the war rate of 1898, which was 91.03; or, as he does in another place, with the average of the thirty-one years, 1870–1900, which was 41.95. Between 1882 and 1896 the death rate was only once over 37, and its usual range was between that figure and 29. This would be a fairer basis for comparison, and even this shows a decrease of one-third in total deaths. The race distribution of births and deaths exhibits one curious feature, the low birth rate among the colored population, only 13.67 per thousand, against 23.78 for the whites. The result, in combination with a slightly higher death rate for the colored population, is a net excess of deaths over births in that section of the community amounting to 513, while the native whites have increased by 1740. As regards the infectious disease it appears that an encouraging decrease has taken place since the beginning of the American occupation, as may be seen from the following table: —

DEATHS FROM CERTAIN ZYMOTIC DISEASES, 1892–1901.

	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.
Tuberculosis . . .	1,528	1,342	1,314	1,623	1,578	1,926	2,794	981	851	900
Malaria	202	240	201	206	450	811	1,907	909	344	151
Typhoid Fever . . .	366	208	100	183	487	679	1,012	140	90	83
Diphtheria, Croup .	84	147	76	25	19	36	23	39	15	25
Small-pox	0	8	216	181	1,004	1,404	168	4	2	0

It should here be noted again, that the amount of disease during the three years, 1896–98, was greatly in excess of the normal. It is evident, however, that the deaths from typhoid fever and tuberculosis have been sensibly decreased, as compared with the period prior to 1896. Small-pox was absent from the city, as it is today, in 1885 and 1886, and again in 1892, between sharp epidemic outbreaks. The great triumph of the army surgeons has, however, been in the fight against yellow fever. This disease has been a scourge of Havana for over two hundred years, and the tables published in the report show that during the period, 1856–1900, it caused an average of 751 deaths a year; the maximum, in 1857, was 2058; the minimum, in 1866, 51. Sanitary improvements, up to 1900, had made some difference in its prevalence, but in that year the yellow-fever deaths amounted to 310. The brilliant and devoted work of Dr. Reed, Dr. Carroll, and Dr. Agramonte showed at this time that the bite of a certain mosquito was the means, and, probably, the only means by which this disease could be transmitted. March 1, 1901, an active campaign against the mosquito was begun, involving the inspection by the "Stegomyia Brigade" of 119,537 houses. The result has been that there have occurred between March 1, 1901, and Feb. 15, 1902, only 6 deaths from yellow fever; there has not been a case in the city since Sept. 28, 1901. The records for the last five years will give a fair idea of what this really means.

DEATHS FROM YELLOW FEVER IN HAVANA.

Year.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1897 . .	69	24	30	71	88	174	168	102	56	42	26	8
1898 . .	7	1	2	1	4	3	16	16	34	26	13	13
1899 . .	1	0	1	2	0	1	2	13	18	25	18	22
1900 . .	8	9	4	0	2	8	30	49	52	74	54	20
1901 . .	7	5	1	0	0	0	1	2	2	0	0	0

It may be noted that this wonderful triumph of sanitation was made possible, not only by vivisection, but by human vivisection, the demonstration that the mosquitoes really carried the disease being made by allowing them to bite non-immune persons who volunteered for the experiment.

C.-E. A. WINSLOW.

MORTALITY STATISTICS OF ITALY.

Statistica delle Cause di Morte Nell' Anno 1899. Roma, 1901.

This summary of the mortality statistics of Italy for 1899 is issued by the Minister of Agriculture, Industry and Commerce. The population employed as a basis of estimate is that of June 30, 1899, which is estimated to have been 32,112,900. (The census population of Feb., 1901, was 32,450,750). The total number of deaths in 1899 was 703,393, which was equivalent to a death rate of 21.9, being the lowest death rate recorded since the system of accurate records was established. The highest death rate was 28.1 per 1000 in 1887.

The deaths of males were 355,654, and those of females were 347,739.

The explanation of the decided fall in the death rate is to be found in the tables of causes of death, and shows that the decrease is mainly in the class of infectious diseases.

The following figures for the years 1887 and 1899 are selected from the tables, the relative figures being given as more significant than the absolute figures :—

DEATH RATES PER MILLION INHABITANTS, ITALY, 1877 AND 1899.

Causes of Deaths.	1887.	1899.	Causes of Deaths.	1887.	1889.
Small-Pox	550	7	Puerperal Fever . .	85	41
Measles	806	231	Cancer	428	519
Scarlet Fever . . .	496	140	Apoplexy and Paralysis .	1,124	1,132
Diphtheria . . .	956	515	Bronchitis	2,165	1,824
Whooping Cough . .	378	246	Pneumonia . . .	2,163	2,247
Influenza	18	133	Heart Disease . . .	1,366	1,643
Malarial Fever . . .	713	337	Diarrheal Diseases . .	3,372	2,961
Erysipelas	178	93	Kidney Diseases . .	256	399
Syphilis	64	73	*Violence* (Accidents) .	379	319
Rabies	3	2	Homicidal	52	44
Pulmonary Tuberculosis	1,078	1,092	Suicidal	49	63
Tabes mesenterica . .	462	273			

By the foregoing table it appears that the decrease in the mortality from infectious diseases much more than counterbalances the increase in the so-called local diseases. The same observation is true of most countries in which the mortality has been recorded in the same periods.

The deaths of infants under one year were 168,244, or 23.9 per cent of the total mortality. The principal causes of infantile mortality were debility, diarrheal diseases, acute bronchitis and convulsions.

The deaths from violence are carefully classified by causes, ages, sex, seasons, and conjugal conditions. The accidental and homicidal deaths had slightly diminished, comparing the first three years, 1887, 1888 and 1889, with the last three years, 1897, 1898 and 1899, and the suicides had increased. The principal modes of death by accident were drowning, falls and burning, these three modes constituting two-thirds of the accidental deaths.

The accidental deaths from poisoning in 1899 were 158, of which 18 were by mushrooms, 13 by corrosive sublimate, 16 by sulphuric acid, and 18 by the bites of snakes and other poisonous animals. The principal poisons used for suicidal purposes were corrosive sublimate, sulphuric acid, phosphorus, strychnine, sulphate of copper and arsenic.

Of each 1000 suicides for the whole period of 1887–'99, 263 were among farmers, herdsmen and shepherds, 64 among merchants and tradesmen, 53 of clerks, 53 of soldiers, 28 of metal workers, 28 of shoemakers, and 24 of carpenters.

S. W. A.

AMERICAN

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A STATISTICAL STUDY OF THE FATALITY OF TYPHOID FEVER AT DIFFERENT SEASONS.

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Introduction.

Study of the statistics of various typhoid epidemics suggested to me the idea that the isolated cases of the disease occurring in the late winter and spring months had a fatal termination in larger proportion than the much more numerous cases characteristic of the autumn. I have since found that this opinion is held by some practicing physicians on the strength of their personal observation. No exhaustive attempt has been made to study medical literature for references to this subject: one of the earliest writers on typhoid fever, however, Charles Murchison ("A Treatise on the Continued Fevers of Great Britain," London, 1862), quoted Chomel ("Leçons de Clinique Méd. Tom. 1. Fièvre Typhoide," Paris, 1834), Forget ("Traité de l'Enterite Folliculeuse," Paris, 1841), and Bartlett ("The Fevers of the United States," Philadelphia, 1856), as claiming that the fatality in France and America is doubled in the cold months. He also gave the following figures from the records of the London Fever Hospital for the period 1848–57: —

FATALITY OF TYPHOID FEVER, DEATHS PER 100 CASES, LONDON FEVER HOSPITAL, 1848–57.

Spring	19.82
Summer	18.03
Autumn	18.23
Winter	17.91

In the second edition of the same work, issued in 1873, Dr. Murchison extended his table up to 1870, as follows:—

FATALITY OF TYPHOID FEVER, DEATHS PER 100 CASES, LONDON FEVER HOSPITAL, 1848–70.

Spring (March, April, May)	16.99
Summer	17.98
Autumn	16.66
Winter	16.90

These results differ considerably from those published for the first period; but the author concluded, "it appears that the mortality was slightly less in autumn, when the disease was most prevalent."

The most recent monograph on typhoid fever ("Typhoid Fever and Typhus Fever," H. Curschmann; English version edited by W. Osler, 1901) adds nothing to the above suggestions, dismissing the subject in the following sentence: "The extent to which climate and season are operative in this connection appears to be not yet sufficiently determined, although Murchison believed that from a study of the statistics of the London Fever Hospital he was able to make out a greater mortality from typhoid fever in the spring."

It seemed to me worth while to attempt to discover whether any such relation between season and the fatality of typhoid fever really existed, both as a practical medical problem, and as one which might throw light on the theoretical questions which relate to the complex struggle between the human body and a parasitic micro-organism..

Statistics of Massachusetts and the City of New York.

I turned first to the reports of the State Board of Health of Massachusetts. In the statistical summaries of disease and mortality at the end of each of these reports is published a table of the weekly mortality returns, voluntarily made by the officials of the principal cities and towns, comprising in 1900 about two-thirds of the total population of the State. The weekly deaths from typhoid fever, extracted from these tables for the five years, 1896–1900, form Table I appended to this paper. In another section of the statistical summaries of disease and mortality mentioned above is given a table of cases of infectious diseases reported to the State Board of Health by months. The reporting population is somewhat larger than that contributing to the returns of deaths, but as there is no reason to suspect any seasonal variation in the ratio of the populations the figures serve for the purpose of the present investigation. The monthly cases of typhoid fever, 1896–1900, obtained from this source will be found in Table II.

My second set of figures was obtained from the files of the New York City *Record*, in which the cases and deaths of the infectious diseases are published week by week. Table III was compiled from these weekly returns for the borough of Manhattan and the Bronx for the period 1896–1900.

The returns of the typhoid cases and deaths in these communities are summarized by quarters, with totals for the five-year periods, 1896–1900, in Tables IV (Massachusetts) and V (New York). It might at first appear that a fair idea of the relative fatality of the disease in the different quarters of the year could be obtained by calculating directly the ratio between the figures for the cases and the deaths in the last column of these tables. The result of this comparison is as follows: —

TYPHOID FEVER IN MASSACHUSETTS, 1896–1900.

	Quarter.			
	First.	**Second.**	**Third.**	**Fourth.**
Cases	1,609	1,518	4,381	5,091
Deaths	375	284	636	763
Fatality (deaths per 100 cases) . .	23.3	18.7	14.5	15.0

TYPHOID FEVER IN NEW YORK CITY, 1896–1900.

	Quarter.			
	First.	Second.	Third.	Fourth.
Cases	702	711	2.799	2,847
Deaths	208	202	584	615
Fatality (deaths per 100 cases) . .	29.6	28.4	20.9	21.6

The absolute fatality rates have, of course, but little significance for the present investigation, and the fact that the rate in New York is so much higher than that in Massachusetts is probably due to more complete reporting of cases in Massachusetts, and to the fact that the population registering deaths in Massachusetts, as noted above, is not so large as that reporting cases.

There is one serious source of error, however, which affects the relative values for the different quarters, the only thing with which this paper attempts to deal. This error is introduced by the lapse of time between the reporting of a case of typhoid fever and its fatal termination. If the prevalence of the disease were constant throughout the year this factor would not be of great significance, but with the great variations which exist it becomes of importance. Thus it will be seen by reference to Table I that in Massachusetts at the beginning of the last quarter of 1896 typhoid deaths were occurring at the rate of 17 or 18 per week, while at the end of the quarter only 6 deaths a week were recorded. The deaths for several weeks at the beginning of the quarter really belong to the cases reported and progressing in the quarter preceding, and in their stead should be substituted the much smaller number of deaths registered for the first few weeks of 1897. The fatality rate for the last quarter of the year, as thus calculated, must, therefore, be larger than the true one. The only way to obviate this difficulty and to obtain a quarterly rate nearer the truth is to substitute for the deaths reported in the first few weeks of each quarter the deaths reported in the corresponding weeks of the quarter next following, choosing as a correction factor that number of weeks which shall correspond as nearly as possible to the average time which elapses between the clear manifestation of a case of typhoid fever and its fatal termination. This last figure is, however, difficult to determine, as the course of the disease varies widely, death ensuing sometimes in the first week, sometimes in relapses after three months. I first took for my correction factor a period of six weeks, and by shifting the reported deaths back in the manner described, obtained Table VI. The totals for the five years, as calculated on this basis, with the resulting fatality rates, are as follows: —

Typhoid Fever in Massachusetts, 1896-1900.

	Quarter.			
	First.	Second.	Third.	Fourth.
Cases	1,609	1,518	4,381	5,091
Deaths (corrected by shifting 6 weeks)	328	318	868	547
Fatality (deaths per 100 cases) . .	20.4	20.9	19.8	10.7

Typhoid Fever in New York City, 1896-1900.

	Quarter.			
	First.	Second.	Third.	Fourth.
Cases	702	711	2,799	2,847
Deaths (corrected by shifting 6 weeks)	190	303	705	419
Fatality (deaths per 100 cases) . .	27.1	43.0	25.4	14.6

These results are striking; but the six weeks assumed for the duration of the disease in this calculation is too long a period. Just as the crude fatality rates for the last quarter of the year were too high because a large number of deaths resulting from September cases was compared with a small number of December cases, so here the over-corrected rates for the last quarter are too low, because a small number of deaths in January and February are compared with a large number of cases in October. As has been stated, it is very difficult to determine the true mean for the time elapsing before death occurs in typhoid fever. According to Curschmann (*loc. cit.*), "The largest number of deaths in average epidemics of ordinary character occurs between the second half of the second and the end of the fourth week." Probably a correction factor of three weeks is as near an approximation to the truth as can well be made in order to refer as much as possible of the mortality to the morbidity with which it actually belongs. This value was, therefore, finally selected; and Table VII shows the deaths by quarters, corrected by shifting the actual figures back three weeks. The deaths for the first quarter of the year thus include those recorded for the fourth to the sixteenth week, inclusive. The fatality rates calculated on this basis then become as follows: —

TYPHOID FEVER IN MASSACHUSETTS, 1896-1900.

	Quarter.			
	First.	Second.	Third.	Fourth.
Cases	1,609	1,518	4,381	5,091
Deaths (corrected by shifting 3 weeks)	340	285	781	650
Fatality (deaths per 100 cases) . . .	21.1	18.8	17.8	12.8

TYPHOID FEVER IN NEW YORK CITY, 1896-1900.

	Quarter.			
	First.	Second.	Third.	Fourth.
Cases	702	711	2,799	2,847
Deaths (corrected by shifting 3 weeks)	186	248	674	509
Fatality (deaths per 100 cases) . . .	26.5	34.9	24.1	17.9

The rates obtained in this way are intermediate between those given in the two previous tables; and the considerable change introduced by the shifting backward of the recorded deaths illustrates the dangers attendant upon any such procedure, and the necessity for extreme care in its application. It seems probable that the last table, in which the deaths have been shifted three weeks, more nearly represents the truth than do either of the others. All three tables show a distinctly lower fatality in the last two quarters, and especially in the last quarter, than occurs in the first half of the year. Although the difference is not great, it appears that in these instances Murchison's suggestion is confirmed. The fatality of typhoid fever seems to be slightly greater in the late winter and spring.

Statistics of the Cities of Berlin and Providence.

The New York and Massachusetts statistics are particularly suited for such a study as this, because of their weekly records of deaths. They may be supplemented, however, by calculations based on monthly statistics, for, it may be assumed, the shifting back of the deaths by a month instead of three weeks does not introduce a large error.

In the statistical year-book of the city of Berlin the reported cases of typhoid fever are given by months, with the total deaths from the disease, and the deaths occurring among cases previously reported. The first and third of these quantities for the ten years, 1889–98, have been extracted to form Table VIII of this paper. The deaths among the reported cases were, of course, chosen, rather than the total deaths, for closer comparability. Summing up the monthly totals, as given in Table VIII, directly, and calculating the fatality rates, the following table is obtained: —

TYPHOID FEVER IN BERLIN, 1889–98.

	Quarter.			
	First.	Second.	Third.	Fourth.
Cases	1,269	1,011	2,650	1,530
Deaths	225	144	270	247
Fatality (deaths per 100 cases) . . .	17.7	14.2	10.2	16.1

Here, as in the previous uncorrected tables, the rate for the last quarter is too high on account of the inclusion of deaths which belong to the cases reported in September, the maximum month of the year. By shifting the deaths back one month, so that the first quarter includes deaths in February, March, and April, and so on for the other quarters, a slight error, in the opposite sense, is introduced, but the result is probably much nearer the truth. The table as thus calculated is as follows: —

Typhoid Fever in Berlin, 1889–98.

	Quarter.			
	First.	**Second.**	**Third.**	**Fourth.**
Cases	1,269	1,011	2,650	1,530
Deaths (corrected by shifting 1 month)	217	155	303	211
Fatality (deaths per 100 cases) . . .	17.1	15.3	11.4	13.8

Finally, the figures for one more American city, with a particularly excellent system of registration, came by chance to my attention. In the report of the superintendent of health of Providence, R. I., for the year 1900 was published a table of typhoid cases and deaths, which will be found in Table IX below. These figures have been summarized by quarters, first without change, and then with the same correction that was made in the case of the Berlin statistics.

Typhoid Fever in Providence, 1885–1900.

	Quarter.			
	First.	**Second.**	**Third.**	**Fourth.**
Cases	468	294	722	1,278
Deaths	161	131	186	324
Fatality (deaths per 100 cases) . . .	34.4	44.6	25.8	25.4

TYPHOID FEVER IN PROVIDENCE, 1885-1900.

	Quarter.			
	First.	Second.	Third.	Fourth.
Cases	468	294	722	1,278
Deaths (corrected by shifting 1 month)	137	133	229	303
Fatality (deaths per 100 cases) . . .	29.3	45.6	31.7	23.7

The fatality rates for Berlin and Providence, as thus finally calculated, bear out the conclusions obtained in the case of New York and Massachusetts. The relations between the first and second quarter, and between the third and fourth quarter, vary; but the second half of the year, on the whole, shows a distinctly lower fatality rate than the first half.

Statistics of the Massachusetts General Hospital and the Boston City Hospital.

The seasonal fatality rates, obtained by comparing the figures for registered deaths and reported cases as given in the official reports of boards of health, are open to two objections. In the first place, the shifting of the deaths for the purpose of referring them to the cases with which they really belong is a somewhat uncertain proceeding and may introduce error. In the second place, it is conceivable that the completeness of the reporting of cases varies slightly with the time of year. It may be that physicians are more on the lookout for typhoid fever in the autumn, when it is abundant, and report at that time light cases which might go unnoticed as mere diarrhœal disease in the spring.

Both these difficulties are obviated by the study of hospital statistics. The history of each individual being known there is no doubt as to the case to which any death belongs. And there is no reason to suppose that the character of the cases admitted at different seasons varies materially. I have, therefore, obtained, through the courtesy of Drs. G. H. M. Rowe and E. S. Abbot of the Boston City Hospital, and

Drs. H. B. Howard and Herman Gross of the Massachusetts General Hospital, the records of typhoid admissions at those institutions for periods of ten years. I wish here to express my thanks to those gentlemen for their permission to use these data. The figures, which will be found in Table X (Massachusetts General Hospital) and Table XI (Boston City Hospital) were obtained directly from the card catalogues of the hospitals. They include first, the total admissions of typhoid fever, arranged by months of admission; and second, the cases which terminated fatally, arranged also by months of admission. A direct comparison of the quarterly totals will thus give a true fatality rate for the cases admitted in each quarter of the year.

Typhoid Fever at the Massachusetts General Hospital, 1891–1900.

	Quarter of Admission.			
	First.	Second.	Third.	Fourth.
Total cases	108	146	680	466
Cases terminating fatally	16	16	81	56
Fatality (fatal cases per 100 total cases)	14.8	11.0	11.9	12.0

In the first and second quarters these records show so small a number of admissions that the value of any generalization drawn from them is somewhat impaired.

Typhoid Fever at the Boston City Hospital, 1888–97.

	Quarter of Admission.			
	First.	Second.	Third.	Fourth.
Total cases	244	376	1,496	1,029
Cases terminating fatally	43	65	183	111
Fatality (fatal cases per 100 total cases)	17.6	17.3	12.2	10.8

The relative fatality rates for the City Hospital coincide with those obtained by the study of the Massachusetts and New York statistics. Those for the Massachusetts General Hospital correspond, except that the rate for the second quarter is low. As noted above, in this case the total number of deaths included is so small that chance variation is not eliminated. The general bearing of the hospital statistics is to strengthen the inference that the fatality of typhoid is lessened in the autumn months.

Conclusions.

The results of all the statistics examined are summarized in the subjoined table for comparison. The rates for Massachusetts, New York, Berlin, and Providence are the final corrected rates, obtained in the first two cases by shifting the deaths back three weeks, and in the cases of Berlin and Providence by shifting them back one month.

QUARTERLY FATALITY OF TYPHOID FEVER.

	Quarter.			
	First.	**Second.**	**Third.**	**Fourth.**
Massachusetts	21.1	18.8	17.8	12.8
New York (city)	26.5	34.9	24.1	17.9
Berlin	17.1	15.3	11.4	13.8
Providence	29.3	45.6	31.7	23.7
Massachusetts General Hospital . .	14.8	11.0	11.9	12.0
Boston City Hospital	17.6	17.3	12.2	10.8

Inspection of this table shows that in four of the six cases the first quarter has the highest fatality; in three of the six cases the second quarter comes second; in four of the six cases the third quarter ranks third; and in four of the six cases the fourth quarter has the lowest fatality rate. In the whole series, excepting the figures for Providence and the Massachusetts General Hospital, the lowest rate for the first two quarters is higher than the highest recorded for the last two. In every instance the fatality for the first half year, as a whole, is distinctly above that for the second.

An explanation of this phenomenon must be based upon one of two factors, — a seasonal difference, either in the virulence of the typhoid bacillus or in the vital resistance of the human organism. As far as I am aware there is nothing to indicate that any increase takes place, but rather the reverse, in the vigor of the germ in the first half of the year; if any thing, it is probably weakened by the winter. On the other hand, certain facts suggest that the resistance of the human body may undergo a variation which would account for the differing fatality. Studies of general seasonal mortality indicate that deaths from all causes are most numerous in the first quarter of the year, and suggest that, as might be expected, the vitality of the body is lowered at the end of winter. Thus in the *Report of the State Board of Health of Massachusetts for 1896* will be found a table of monthly mortality-rates which shows that for the period 1876–80 the average daily number of deaths in Switzerland, Germany, Austria, and France was constantly over the average for the year from December to May, and constantly under the average for the year for the other six months. In Italy, and in Massachusetts itself, two maxima appear; one in the first, and another in the third quarter. Several observers have pointed out that different classes of diseases contribute to these two maxima.

The winter death rate is raised by influenza, bronchitis, pneumonia, and other diseases which depend particularly upon a lowered vitality of their victims, attacking mainly the old and weak. The summer diseases, on the contrary, are the fevers and diarrhœal diseases of children, which are due mainly to the greater development of micro-organisms at that season. The increased fatality of typhoid fever in the first quarter of the year may then be due to a general lowering of the vitality of the human body at that period. At any rate, a theory to that effect would explain the paradox that in spring, when the germs are presumably least numerous typhoid fever is most severe, and that this disease is least fatal in the autumn when the germs are probably most abundant.

In closing, I wish to express gratitude to Prof. W. T. Sedgwick and Prof. D. R. Dewey of the Massachusetts Institute of Technology for advice in the preparation of this paper.

TABLE I.

REPORTED DEATHS FROM TYPHOID FEVER IN MASSACHUSETTS ANNUAL REPORTS. STATE BOARD OF HEALTH. STATISTICAL SUMMARIES OF DISEASE AND MORTALITY, I.

1896.

First Quarter.		Second Quarter.		Third Quarter.		Fourth Quarter.	
Week Ending.	Deaths.	Week Ending.	Deaths.	Week Ending.	Deaths.	Week Ending.	Deaths.
Jan. 4 . .	8	April 4 .	4	July 4 . .	5	Oct. 3 . .	18
" 11 . .	8	" 11 .	5	" 11 . .	5	" 10 . .	13
" 18 . .	8	" 18 .	6	" 18 . .	6	" 17 . .	18
" 25 . .	6	" 25 .	7	" 25 . .	2	" 24 . .	17
Feb. 1 . .	9	May 2 .	2	Aug. 1 . .	6	" 31 . .	17
" 8 . .	8	" 9 .	4	" 8 . .	7	Nov. 7 . .	15
" 15 . .	8	" 16 .	7	" 15 . .	18	" 14 . .	15
" 22 . .	7	" 23 .	7	" 22 . .	10	" 21 . .	9
" 29 . .	3	" 30 .	5	" 29 . .	14	" 28 . .	9
Mar. 7 . .	6	June 6 .	6	Sept. 5 . .	7	Dec. 5 . .	12
" 14 . .	7	" 13 .	5	" 12 . .	14	" 12 . .	6
" 21 . .	3	" 20 .	2	" 19 . .	23	" 19 . .	6
" 28 . .	8	" 27 .	7	" 26 . .	12	" 26 . .	6

1897.

First Quarter.		Second Quarter.		Third Quarter.		Fourth Quarter.	
Week Ending.	Deaths.	Week Ending.	Deaths.	Week Ending.	Deaths.	Week Ending.	Deaths.
Jan. 9 . .	9	April 10 .	5	July 10 . .	9	Oct. 9 . .	15
" 16 . .	6	" 17 .	5	" 17 . .	4	" 16 . .	11
" 23 . .	10	" 24 .	5	" 24 . .	8	" 23 . .	12
" 30 . .	6	May 1 .	2	" 31 . .	2	" 30 . .	6
Feb. 6 . .	8	" 8 .	6	Aug. 7 . .	10	Nov. 6 . .	11
" 13 . .	5	" 15 .	2	" 14 . .	9	" 13 . .	9
" 20 . .	2	" 22 .	3	" 21 . .	10	" 20 . .	15
" 27 . .	6	" 29 .	3	" 28 . .	17	" 27 . .	11
March 6 . .	7	June 5 .	5	Sept. 4 . .	15	Dec. 4 . .	6
" 13 . .	6	" 12 .	0	" 11 . .	16	" 11 . .	9
" 20 . .	8	" 19 .	6	" 18 . .	14	" 18 . .	4
" 27 . .	1	" 26 .	5	" 25 . .	16	" 25 . .	17
April 3 . .	8	July 3 .	3	Oct. 2 . .	8	Jan. 1, '98 .	11

TABLE I.—*Continued.*

1898.

First Quarter.		Second Quarter.		Third Quarter.		Fourth Quarter.	
Week Ending.	Deaths.	Week Ending.	Deaths.	Week Ending.	Deaths.	Week Ending.	Deaths.
Jan. 8 . .	8	April 9 .	3	July 9 . .	5	Oct. 8 . .	17
“ 15 . .	1	“ 16 .	11	“ 16 . .	1	“ 15 . .	17
“ 22 . .	5	“ 23 .	4	“ 23 . .	4	“ 22 . .	17
“ 29 . .	5	“ 30 .	5	“ 30 . .	4	“ 29 . .	13
Feb. 5 . .	2	May 7 .	5	Aug. 6 . .	4	Nov. 5 . .	15
“ 12 . .	6	“ 14 .	3	“ 13 . .	7	“ 12 . .	16
“ 19 . .	9	“ 21 .	6	“ 20 . .	9	“ 19 . .	9
“ 26 . .	2	“ 28 .	2	“ 27 . .	11	“ 26 . .	4
March 5 . .	1	June 4 .	6	Sept. 3 . .	12	Dec. 3 . .	14
“ 12 . .	3	“ 11 .	4	“ 10 . .	14	“ 10 . .	7
“ 19 . .	7	“ 18 .	5	“ 17 . .	18	“ 17 . .	13
“ 26 . .	7	“ 25 .	2	“ 24 . .	12	“ 24 . .	15
April 2 . .	5	July 2 .	5	Oct. 1 . .	19	“ 31 . .	6

1899.

First Quarter.		Second Quarter.		Third Quarter.		Fourth Quarter.	
Week Ending.	Deaths.	Week Ending.	Deaths.	Week Ending.	Deaths.	Week Ending.	Deaths.
Jan. 7 . .	8	April 8 .	7	July 8 . .	3	Oct. 7 . .	12
“ 14 . .	14	“ 15 .	8	“ 15 . .	13	“ 14 . .	12
“ 21 . .	10	“ 22 .	5	“ 22 . .	6	“ 21 . .	19
“ 28 . .	5	“ 29 .	4	“ 29 . .	12	“ 28 . .	10
Feb. 4 . .	3	May 6 .	6	Aug. 5 . .	9	Nov. 4 . .	11
“ 11 . .	4	“ 13 .	9	“ 12 . .	14	“ 11 . .	18
“ 18 . .	8	“ 20 .	4	“ 19 . .	9	“ 18 . .	13
“ 25 . .	4	“ 27 .	2	“ 26 . .	10	“ 25 . .	10
March 4 . .	3	June 3 .	1	Sept. 2 . .	6	Dec. 2 . .	8
“ 11 . .	4	“ 10 .	2	“ 9 . .	14	“ 9 . .	13
“ 18 . .	4	“ 17 .	5	“ 16 . .	20	“ 16 . .	7
“ 25 . .	3	“ 24 .	3	“ 23 . .	13	“ 23 . .	6
April 1 . .	5	July 1 .	0	“ 30 . .	15	“ 30 . .	6

TABLE I.—*Continued.*

1900.

First Quarter.		Second Quarter.		Third Quarter.		Fourth Quarter.	
Week Ending.	Deaths.	Week Ending.	Deaths.	Week Ending.	Deaths.	Week Ending.	Deaths.
Jan. 6 . .	3	April 7 .	2	July 7 . .	8	Oct. 6 . .	15
" 13 . .	7	" 14 .	2	" 14 . .	5	" 13 . .	16
" 20 . .	9	" 21 .	7	" 21 . .	3	" 20 . .	13
" 27 . .	7	" 28 .	7	" 28 . .	4	" 27 . .	15
Feb. 3 . .	3	May 5 .	4	Aug. 4 . .	6	Nov. 3 . .	14
" 10 . .	5	" 12 .	4	" 11 . .	7	" 10 . .	8
" 17 . .	6	" 19 .	8	" 18 . .	10	" 17 . .	9
" 24 . .	3	" 26 .	2	" 25 . .	12	" 24 . .	12
March 3 . .	4	June 2 .	3	Sept. 1 . .	10	Dec. 1 . .	12
" 10 . .	4	" 9 .	5	" 8 . .	14	" 8 . .	7
" 17 . .	6	" 16 .	2	" 15 . .	12	" 15 . .	7
" 24 . .	6	" 23 .	1	" 22 . .	7	" 22 . .	14
" 31 . .	10	" 30 .	3	" 29 . .	12	" 29 , .	20

TABLE II.

REPORTED CASES OF TYPHOID FEVER IN MASSACHUSETTS. ANNUAL REPORTS STATE BOARD OF HEALTH. STATISTICAL SUMMARIES OF DISEASE AND MORTALITY, III.

Month.	Year.				
	1896.	1897.	1898.	1899.	1900.
January	144	178	112	146	140
February	92	83	76	73	84
March	72	78	104	102	125
April	65	86	95	135	80
May	108	94	86	81	119
June	114	96	95	100	164
July	135	98	93	158	150
August	321	242	240	385	241
September	409	311	471	567	560
October	609	410	393	447	600
November	346	226	253	306	344
December	222	178	178	256	323

TABLE III.

Reported Cases and Deaths from Typhoid Fever in New York (Manhattan and the Bronx). New York City Record.

1896.

First Quarter.			Second Quarter.			Third Quarter.			Fourth Quarter.		
Week Ending.	Cases.	Deaths.	Week Ending.	Cases.	Deaths.	Week Ending.	Cases.	Deaths.	Week Ending.	Cases.	Deaths.
Jan. 11	13	5	April 11	3	0	July 11	15	5	Oct. 10	24	5
" 18	3	5	" 18	5	3	" 18	20	4	" 17	33	5
" 25	12	5	" 25	13	4	" 25	20	7	" 24	33	10
Feb. 1	8	3	May 2	3	2	Aug. 1	15	7	" 31	29	6
" 8	8	5	" 9	6	2	" 8	27	9	Nov. 7	26	4
" 15	7	2	" 16	8	1	" 15	37	15	" 14	22	7
" 22	12	8	" 23	5	4	" 22	48	10	" 21	38	6
" 29	7	5	" 30	10	3	" 29	15	6	" 28	31	10
March 7	6	3	June 6	13	4	Sept. 5	28	8	Dec. 5	44	14
" 14	10	1	" 13	14	5	" 12	51	10	" 12	29	13
" 21	10	2	" 20	10	1	" 19	50	10	" 19	18	3
" 28	8	3	" 27	7	1	" 26	25	10	" 26	37	7
April 4	15	6	July 4	22	3	Oct. 3	43	5	Jan. 2, '97	18	7

1897.

First Quarter.			Second Quarter.			Third Quarter.			Fourth Quarter.		
Week Ending.	Cases.	Deaths.	Week Ending.	Cases.	Deaths.	Week Ending.	Cases.	Deaths.	Week Ending.	Cases.	Deaths.
Jan. 9	11	0	April 10	6	3	July 10	18	0	Oct. 9	54	8
" 16	15	5	" 17	6	0	" 17	27	8	" 16	50	7
" 23	11	0	" 24	8	4	" 24	23	9	" 23	40	17
" 30	6	0	May 1	3	2	" 31	34	8	" 30	37	5
Feb. 6	7	2	" 8	5	2	Aug. 7	48	11	Nov. 6	28	9
" 13	13	0	" 15	13	1	" 14	63	9	" 13	30	9
" 20	6	2	" 22	8	6	" 21	33	9	" 20	26	4
" 27	9	7	" 29	12	4	" 28	29	12	" 27	38	5
March 6	4	3	June 5	10	3	Sept. 4	50	7	Dec. 4	46	7
" 18	8	2	" 12	11	2	" 11	28	7	" 11	61	14
" 20	5	2	" 19	7	3	" 18	38	6	" 18	34	13
" 27	8	0	" 26	10	8	" 25	40	9	" 25	27	7
April 8	2	4	July 3	13	5	Oct. 2	32	4	Jan. 1, '98	17	8

TABLE III.—*Continued.*

1898.

First Quarter.			Second Quarter.			Third Quarter.			Fourth Quarter.		
Week Ending.	Cases.	Deaths.	Week Ending.	Cases.	Deaths.	Week Ending.	Cases.	Deaths.	Week Ending.	Cases.	Deaths.
Jan. 8	19	1	April 9	13	3	July 9	12	9	Oct. 8	102	19
" 15	12	0	" 16	10	0	" 16	10	3	" 15	66	12
" 22	9	1	" 23	3	0	" 23	12	2	" 22	99	15
" 29	8	2	" 30	12	5	" 30	23	4	" 29	66	14
Feb. 5	10	2	May 7	12	3	Aug. 6	20	4	Nov. 5	41	9
" 12	12	5	" 14	5	3	" 13	22	6	" 12	45	9
" 19	17	2	" 21	9	0	" 20	84	14	" 19	51	5
" 26	15	2	" 28	13	4	" 27	75	24	" 26	34	12
March 5	9	4	June 4	5	3	Sept. 3	156	15	Dec. 3	50	11
" 12	10	4	" 11	9	4	" 10	102	32	" 10	24	10
" 19	11	2	" 18	18	2	" 17	146	19	" 17	35	8
" 26	12	1	" 25	17	7	" 24	122	20	" 24	15	6
April 2	20	5	July 2	10	4	Oct. 1	131	17	" 31	22	4

1899.

First Quarter.			Second Quarter.			Third Quarter.			Fourth Quarter.		
Week Ending.	Cases.	Deaths.	Week Ending.	Cases.	Deaths.	Week Ending.	Cases.	Deaths.	Week Ending,	Cases.	Deaths.
Jan. 7	13	9	April 8	17	3	July 8	10	5	Oct. 7	45	13
" 14	13	3	" 15	7	1	" 15	26	6	" 14	53	12
" 21	9	2	" 22	8	2	" 22	19	4	" 21	57	14
" 28	6	1	" 29	10	6	" 29	27	4	" 28	50	10
Feb. 4	6	3	May 6	10	3	Aug. 5	18	7	Nov. 4	46	10
" 11	9	8	" 13	21	5	" 12	21	5	" 11	32	8
" 18	13	0	" 20	11	5	" 19	40	7	" 18	48	11
" 25	14	5	" 27	9	3	" 26	40	9	" 25	35	7
March 4	10	2	June 3	13	3	Sept. 2	52	6	Dec. 2	29	13
" 11	10	3	" 10	8	1	" 9	58	9	" 9	49	7
" 18	8	2	" 17	8	4	" 16	59	8	" 16	26	4
" 25	7	2	" 24	10	3	" 23	55	12	" 23	29	9
April 1	6	5	July 1	16	0	" 30	42	7	" 30	18	6

TABLE III.— *Continued.*

1900.

First Quarter.			Second Quarter.			Third Quarter.			Fourth Quarter.		
Week Ending.	Cases.	Deaths.	Week Ending.	Cases.	Deaths.	Week Ending.	Cases.	Deaths.	Week Ending.	Cases.	Deaths.
Jan. 6	16	3	April 7	6	3	July 7	22	5	Oct. 6	58	5
" 13	34	10	" 14	11	3	" 14	22	7	" 13	81	16
" 20	15	6	" 21	15	4	" 21	24	5	" 20	48	11
" 27	20	4	" 28	7	3	" 28	19	8	" 27	99	17
Feb. 3	9	7	May 5	11	1	Aug. 4	34	9	Nov. 3	58	9
" 10	6	4	" 12	17	7	" 11	30	9	" 10	49	12
" 17	13	5	" 19	13	2	" 18	29	8	" 17	59	7
" 24	20	7	" 26	11	4	" 25	35	5	" 24	49	10
March 3	4	1	June 2	15	5	Sept. 1	46	11	Dec. 1	73	11
" 10	5	2	" 9	25	1	" 8	60	12	" 8	60	10
" 17	13	4	" 16	26	7	" 15	86	14	" 15	71	15
" 24	22	1	" 23	15	4	" 22	63	16	" 22	51	14
" 31	11	3	" 30	24	5	" 29	90	12	" 29	55	10

TABLE IV.

TYPHOID FEVER IN MASSACHUSETTS. REPORTED CASES BY QUARTERS.

(Obtained by addition of figures in tables of cases of infectious diseases reported by months. See Table II, above.)

	1896.	1897.	1898.	1899.	1900.	1896-1900.
First quarter (3 months) .	308	339	292	321	349	1,609
Second " " " .	287	276	276	316	363	1,518
Third " " " .	865	651	804	1,110	951	4,381
Fourth " " " .	1,177	814	824	951	1,267	5.091

REPORTED DEATHS BY QUARTERS.

(Obtained by addition of figures in tables of weekly mortality returns from reporting cities and towns. See Table I, above.)

	1896.	1897.	1898.	1899.	1900.	1896-1900.
First quarter (13 weeks) .	84	82	61	75	73	375
Second " " " .	67	50	61	56	50	284
Third " " " .	129	133	120	144	110	636
Fourth " " " .	161	137	163	140	162	763

TABLE V.

TYPHOID FEVER IN NEW YORK CITY, 1896–1900.

(Obtained by tabulating figures obtained from weekly reports of local Department of Health.— New York City Record. See Table III, above.)

REPORTED CASES BY QUARTERS.

Quarter.	1896.	1897.	1898.	1899.	1900.	1896–1900.
First	121	105	164	124	188	702
Second	119	112	136	148	196	711
Third	394	463	915	467	560	2,799
Fourth	382	488	650	516	811	2,847

REPORTED DEATHS BY QUARTERS.

Quarter.	1896.	1897.	1898.	1899.	1900.	1896–1800.
First	53	27	31	40	57	208
Second	33	43	38	39	49	202
Third	106	99	169	89	121	584
Fourth	97	113	134	124	147	615

TABLE VI.

TYPHOID FEVER IN MASSACHUSETTS AND NEW YORK CITY, 1896–1900. DEATHS BY QUARTERS.

Corrected for duration of the disease. (Shifted back six weeks so that first quarter of the year includes period from the seventh to the twentieth week, and so on.)

MASSACHUSETTS.

Quarter.	1896.	1897.	1898.	1899.	1900.	1896–1900.
First	65	63	65	70	65	328
Second	70	62	55	74	57	318
Third	196	160	190	164	158	868
Fourth	107	100	112	97	131[1]	547

[1] Includes first six weeks of 1901, figures 9, 9, 4, 12, 10, 6.

NEW YORK CITY.

Quarter.	1896.	1897.	1898.	1899.	1900.	1896–1900.
First	41	32	34	39	44	190
Second	54	76	52	50	71	303
Third	104	109	219	125	148	705
Fourth	67	69	77	81	125[1]	419

[1] Includes first six weeks of 1901, figures 9, 8, 6, 11, 9, 5.

TABLE VII.

TYPHOID FEVER IN MASSACHUSETTS AND NEW YORK CITY, 1896-1900. DEATHS BY QUARTERS.

Corrected for duration of the disease. (Shifted back three weeks so that first quarter of the year includes period from the fourth week to the seventeenth week, etc.

MASSACHUSETTS.

Quarter.	1896.	1897.	1898.	1899.	1900.	1896-1900.
First	75	72	65	63	65	340
Second	68	51	53	58	55	285
Third	162	155	161	165	138	781
Fourth	137	113	144	116	140	650

NEW YORK CITY.

Quarter.	1896.	1897.	1898.	1899.	1900.	1896-1900.
First	45	29	32	32	48	186
Second	42	53	49	48	56	248
Third	110	114	201	113	136	674
Fourth	82	83	102	104	138	509

TABLE VIII.

TYPHOID FEVER IN BERLIN, 1889-98. REPORTED CASES.

(Statistisches Jahrbuch der Stadt Berlin.)

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1889	60	337	144	83	94	81	172	181	94	93	256	85
1890	83	54	32	49	56	47	71	107	149	61	38	38
1891	40	61	62	33	36	35	139	118	166	165	53	53
1892	33	44	25	28	24	38	40	77	133	60	46	41
1893	28	16	25	42	37	26	49	96	229	52	35	16
1894	13	17	12	17	21	15	28	47	54	23	30	24
1895	21	8	12	7	35	43	48	86	79	63	40	31
1896	28	17	13	11	19	17	53	60	35	37	17	11
1897	9	16	18	10	12	33	44	94	59	19	30	30
1898	15	14	12	24	20	21	29	52	61	38	27	18
Total . .	330	584	355	301	354	356	673	918	1,059	611	572	347

TABLE VIII.—*Continued.*

DEATHS AMONG REPORTED CASES.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1889	7	43	32	11	12	7	19	17	15	14	34	10
1890	8	12	7	9	11	5	11	15	8	5	8	1
1891	6	7	11	3	4	5	6	12	11	16	16	4
1892	11	4	12	8	4	4	5	5	12	9	9	8
1893	9	3	5	3	9	5	3	12	23	9	7	4
1894	2	1	5	4	5	2	4	2	7	6	2	9
1895	4	4	6	2	1	10	7	9	17	15	8	11
1896	1	4	3	6	2	2	1	4	8	5	2	8
1897	2	0	4	6	1	3	0	12	9	6	4	4
1898	7	3	2	2	1	2	4	8	4	8	7	3
Total . .	57	81	87	49	50	45	60	96	114	93	97	57

TABLE IX.

TYPHOID FEVER CASES AND DEATHS. PROVIDENCE, R. I., 1885–1900.
(Report, Superintendent of Health, for 1900.)

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Cases . .	207	127	134	110	95	89	132	246	344	342	551	385
Deaths .	69	44	48	45	48	38	47	67	72	90	106	128

TABLE X.

CASES OF TYPHOID FEVER ADMITTED TO THE MASSACHUSETTS GENERAL HOSPITAL, 1891-1900. CLASSIFIED ACCORDING TO MONTH OF ADMISSION.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1891	4	8	2	6	3	3	7	20	28	25	7	6
1892	2	2	2	2	3	5	9	10	37	25	7	6
1893	2	1	3	1	5	5	9	22	17	10	13	6
1894	7	7	3	2	3	7	8	18	34	16	14	2
1195	3	3	2	2	7	9	6	24	28	20	13	6
1896	3	2	4	4	4	5	11	22	30	37	12	11
1897	4	1	1	1	1	4	6	24	17	21	12	5
1898	6	3	4	4	0	10	10	55	67	26	18	17
1899	8	1	2	9	11	8	10	33	43	31	15	9
1900	7	7	4	8	7	7	14	28	33	33	18	25
Total . .	46	35	27	39	44	63	90	256	334	244	129	93

TABLE X.—*Continued.*

CASES OF TYPHOID FEVER AT THE MASSACHUSETTS GENERAL HOSPITAL WHICH TERMINATED FATALLY, 1891-1900. CLASSIFIED ACCORDING TO MONTH OF ADMISSION.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1891	2	..	1	2	..	1	.	5	3	..	1	..
1892	..	1	..	..	..	..	1	2	7	4	1	..
1893	..	..	1	..	..	1	2	1	3	2	2	..
1894	1	..	..	2	..	2	1	2	6	1	2	2
1895	..	..	..	1	1	..	2	4	3	1	2	2
1896	..	..	..	..	..	..	2	2	3	3	5	..
1897	..	..	..	..	1	1	..	5	..	2	2	1
1898	2	..	2	..	..	..	1	6	7	4	1	2
1899	2	..	..	..	1	1	..	2	4	6	..	2
1900	2	..	2	..	2	..	..	2	5	3	2	3
Total . .	9	1	6	5	5	6	9	31	41	26	18	12

TABLE XI.

CASES OF TYPHOID FEVER ADMITTED TO THE BOSTON CITY HOSPITAL, 1888-97. CLASSIFIED ACCORDING TO MONTH OF ADMISSION.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1888	7	1	11	5	18	19	14	45	89	57	25	15
1889	17	8	6	7	9	15	49	83	97	52	25	16
1890	7	12	12	8	13	7	21	51	69	57	25	17
1891	12	7	7	6	15	20	42	47	93	92	39	13
1892	3	6	16	11	12	16	19	31	55	42	36	18
1893	8	9	6	10	20	15	30	44	54	37	33	14
1894	3	2	9	12	12	11	18	70	77	73	31	15
1895	4	3	6	4	15	14	29	69	70	48	22	22
1896	17	6	7	11	17	17	30	70	71	75	49	39
1897	10	13	9	16	11	10	10	27	22	16	15	11
Total . .	88	67	89	90	142	144	263	537	697	549	300	180

TABLE XI.—*Continued.*

CASES OF TYPHOID FEVER AT THE BOSTON CITY HOSPITAL WHICH TERMINATED FATALLY, 1888–97. CLASSIFIED ACCORDING TO MONTH OF ADMISSION.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.,	Oct.	Nov.	Dec.
1888	1	0	2	2	2	2	2	3	12	7	4	3
1889	4	1	0	1	2	4	6	11	11	5	3	2
1890	1	1	2	2	2	0	5	6	3	4	2	3
1891	2	1	2	1	1	0	3	6	14	7	2	1
1892	2	0	2	2	3	2	4	4	10	5	4	4
1893	3	3	1	1	6	1	5	3	8	6	7	1
1894	0	0	0	1	2	2	2	9	12	5	5	2
1895	0	1	3	1	6	3	4	7	7	4	1	3
1896	4	1	0	4	1	3	5	5	6	8	7	3
1897	1	1	4	2	4	2	2	4	4	1	1	1
Total . .	18	9	16	17	29	19	38	58	87	52	36	23

AMERICAN
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THE VITAL STATISTICS OF THE CENSUS OF 1900.

BY FREDERICK L. HOFFMAN.

Introductory.

The apparently impossible has been accomplished within two years of the taking of the census, and the two volumes containing the essential facts regarding human mortality in the United States have been published and distributed. When we recall that the first volume of vital statistics of the Census of 1890 was not distributed until 1896, and that the last was delayed in publication until 1898, the successful conclusion of the efforts of Mr. W. H. King, Chief Statistician of the Division of Vital Statistics, is a matter for public congratulation. For the first time in the history of the census the vital statistics are available at a period when the facts and conclusions can be applied to the solution of present-day problems; and the volumes, therefore, take their well-deserved place as a most useful contribution to the science of vital statistics in the United States. Only those who have been engaged in similar undertakings can fully appreciate the great technical difficulties to be overcome in the preparation of a volume containing a large number of computations derived by an intricate analysis from an enormous body of individual facts. It is not going too far to say that

Part I of vital statistics forms a work of reference for American health officers, physicians, sanitarians, and students of social problems, assuming for this country the place of Newsholme's "Vital Statistics" for the United Kingdom.

Future Annual Reports.

The promise is held out that, under the permanent organization of the Census Office, annual volumes on vital statistics will be published; and it would seem to the writer a question of the greatest possible importance that the expressed wish of Mr. King, in his circular letter, for full and candid criticisms and suggestions should be carried into effect. It is with this end in view, and with full appreciation of the eminently useful services performed by the Chief Statistician, that the following criticisms and suggestions have been brought together. Dealing with a work of such vast proportions and a large number of exceedingly complex, interrelated facts, it has only been possible to do justice to the most important aspects of the problem; but it may be added that the views expressed are based on a careful and painstaking study of vital statistics in this country extending over a period of nearly twenty years, and including a familiarity with nearly the entire body of published reports and observations on mortality in the United States.

Evidence of Indifference to Expert Suggestions.

Mr. King seems to have given little, if any, consideration to the recommendations and suggestions of qualified members of the Special Committee of the American Economic Association on the Methods and Scope of the Twelfth Census; and in a general way the "make-up" of the volumes, the arrangement of the tables, the nomenclature of the diseases and the analytical treatment, combined with the graphic illustrations, are a non-critical repetition of Dr. Billings's methods in the reports of the Eleventh Census. The valuable suggestion by

Professor Fisher that the census of 1900 should contain a critical review of all the mortality statistics of value in the United States was not adopted; nor is there any reference whatever to the earlier census publications on vital statistics, especially the report of De Bow, who first introduced national vital statistics into the Census of 1850.* The well-founded advice of Professor Fisher that the editor of the volumes should "insert short catch-titles for the tables and in general make tables of contents and indexes more usable" was entirely disregarded; and the work in this respect is even inferior to the confusing methods adopted in the volumes of vital statistics of the Eleventh Census. Whatever information is sought must be obtained at a considerable expenditure of time and effort, while the method of making page and table headings proves a source of irritation. To the general public and to the increasing number of medical experts who make practical use of vital statistics the census volumes will on this account prove an exceedingly difficult work of reference.

The Value of Enumerators' Returns.

At the outset, in the introduction to Part I, attention is called to the useful nature of the enumerators' returns. Contrary to the view expressed by Professor Fisher, that the cause of vital statistics would be better advanced by the omission of all enumerated deaths, it is conclusively proven by Mr. King that through the results of enumeration the registration records of States and cities have been materially, and in some instances very materially, improved. Thus, for instance, the number of deaths returned by the registration record of Essex County, New Jersey, was 13 per cent. less than the actual number, as shown by the census enumeration, there having been ninety-nine more deaths than were recorded in the office of the Secretary of the State Board of Health.

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* A very interesting contribution to the practical use of census vital statistics will be found in Archibald Russell's "Principles of Statistical Inquiry as Illustrated in Proposals for Uniting an Examination into the Resources of the United States with the Census to be taken in 1840."

Another illustration is the county of Clinton, New York, where the registration returns gave only 60.5 per cent. of the total deaths as ultimately established upon supplementary information furnished by the enumerators' returns. These illustrations will show the auxiliary value of a system of enumeration as a check upon the accuracy of registration returns and as a means toward a more complete statement of the actual mortality of a given State, district, or city.

Decline in Value of American Registration Reports.

It may not be out of place briefly to comment upon the evidence furnished in the Introduction that there has been in many directions a decline in the efficiency and value of local registration and the publication of results. It is most unfortunate that the American medical press is not sufficiently critical of the contents, nature, and object of local health reports, which, in large numbers, must be received for review. The writer recalls practically no instances of importance in a careful scrutiny of two leading medical journals during a period of ten years in which attention has been called to the inadequacy of local reports and the misleading methods employed by local registrars. It would take up too much space to discuss the matter on this occasion, but a few instances of flagrant abuse and unquestionable decline in efficiency may be pointed out. For some years previous to 1895, under the active efforts of the late Dr. Cochrane, a series of useful, if not entirely accurate, reports on the vital statistics of Alabama had been issued. Since the death of Dr. Cochrane (in 1896, I think) no reports have been issued. For Mobile, Ala., no local reports have been issued since 1894; for Chicago, Ill., none since 1898. For Philadelphia no detailed reports regarding the mortality by cause and age were published in 1897–98; and for Buffalo, N.Y., no reports have been published since 1886. For West Virginia no reports were published for 1897 and 1898. For Pittsburg, Pa., no report will be issued for the year 1901, since the city council has refused to appropriate the necessary funds. The same is true for Kansas City, Mo.; and for a similar reason no report was published for California for 1897–98. For the city of Denver no health report has been published since 1898. For Knoxville, Tenn., after a continuous publication of reasonably useful and accurate reports for twenty-one years, the publication was suddenly suspended in 1894, no report was published for 1895, the publication was resumed in 1896, since which date no annual reports have been printed or given to the public.

For some unaccountable reason the registration reports of Vermont, which for forty years had been issued with a reasonable degree of uniformity and accuracy, were suddenly changed in 1897; and all information relative to the causes of death by ages was omitted. It is difficult to understand the liberty which is thus taken with registration reports on the part of registrars or other State officials. By what right and for what reason any State official can take it upon himself to alter the fundamental data pertaining to the vital history of the State or city is beyond the understanding of the writer. Thus forty years of effort and a large amount of expense for the State of Vermont have practically been wasted, in that all future reports will lack the fundamentally most important data of health and longevity; namely, the mortality from different diseases at different periods of life. This does not at all imply that the reports for Vermont have been exceptionally useful, since they have always fallen materially short of what such reports have been in the States of Massachusetts, Rhode Island, Connecticut, etc.; but how so serious an omission as the ages at death by specified causes could be made is simply evidence of the gross ignorance which still prevails in this country regarding the fundamental character of vital statistics and the utility of such data, if properly prepared and placed before the public. Nor is there to be found in American public health reports a distinct recognition of even the elementary principles of vital statistics, as laid down by Farr, Newsholme, and others. In other words, there appears to be no clear recognition of the real local value of such reports, of their public utility and their greatest possible usefulness.

There is, therefore, an exceptional opportunity before Mr. King to make his annual reports a model to be imitated by local registrars; and public attention should constantly be called to defects in reports of States and cities, which, indeed, is a most necessary but ill-discharged function of medical journalism in the United States. It is nothing to the credit of large American cities, like New York, Boston, Chicago, etc., that their vital statistics and published reports should by degrees have fallen into disuse instead of being constantly improved, as is the case in England, where the local reports of thirty-three towns are models of their kind, of great public usefulness, highly respected, constantly referred to in medical literature, and, finally, a worthy supplement to the annual reports of the Registrar-General. The one notable exception for the United States is the report of the Superintendent of Health and Registrar of Vital Statistics of Providence, R.I., issued annually since 1856. Care should be taken by the Census Office to arrange the future reports so that they shall deal rather with the United States as a whole and set forth general laws of mortality and disease prevalence by general divisions than, by giving too much local information, assume the place of local reports on the health and vital statistics of the different communities. Such reports, if intelligently prepared, are absolutely essential; and the need thereof should be more generally recognized by the medical press of this country. It is a melancholy fact, to one who is familiar with the history of American vital statistics, to note the many wrecks on the shore of time left behind in a few scattered reports for States and cities where once a good beginning was made, only to be abandoned after the initial factor had passed away. Usually it is a one man's work, the value of which is scarcely recognized by the general community, ill-paid and ill-considered, while the results are printed only after much difficulty, if at all. Thus, once upon a time, South Carolina, Georgia, Kentucky, Illinois, and Iowa had registration systems which could have been developed to great usefulness; but the subject was permitted to lapse, and the reports are now curiosities in statistical and mortality literature. If the work of Mr. King does nothing else than to bring before the American public the great utility of vital statistics in determining local conditions predisposing to ill-health at different periods of life, with their causes properly localized, they will form one of the most valuable contributions to the knowledge of the present age.

General Criticism of Scope and Method.

For some peculiar reason the maps showing the disease prevalence in registration States are limited to five diseases, while thirteen maps are devoted to an exhibit of the disease prevalence in different sections of the United States on the basis of ratios of specific diseases to the mortality from all causes. It would have been better to have omitted the maps showing the mortality from influenza in the registration States, and instead thereof to have given maps showing the mortality rates from malaria, pneumonia, and suicide in the area for which accurate information is available. The use of ratios is of very limited value, and likely to lead to serious abuse on the part of those who for local reasons wish to prove one section more healthful than another.

The final section (Tables 20 to 28) of Part I, entitled "Ratio Tables," includes a number of rate tables; and the title is, therefore, misleading. This inadequacy of headlines and catch-titles is met with throughout the census volumes, leading to confusion, and causing great difficulty in making the volumes of practical utility. Thus it requires careful study, on the part of even those who are reasonably familiar with the subject, to determine the exact meaning of the different tables as indicated by the head-lines, which, in most instances, are very inadequate, and sometimes misleading. Table 23, for example, showing "Number of deaths at each age per 1,000 deaths at known ages," fails to indicate that it refers to the mortality by sex, color, and birthplace of mothers. Table 24, showing the "Number of deaths at each age per 1,000 deaths at known ages from each cause," is one which is most likely to be misunderstood by those who are not familiar with this otherwise very useful method of showing the distribution of deaths at different periods of life. It would perhaps have been better if a column had been added, giving the unit of 1,000 for each disease, to indicate exactly the method employed; namely, to show for every 1,000 deaths from each disease the number occurring at each divisional period of life. Table 25, showing the "Number of Deaths from Each Cause per 1,000 Deaths from Known Causes at Each Age," should also have given the unit of 1,000 in the first line underneath the period of life to indicate exactly that what it is meant to show is the proportion of deaths from each specific cause occurring at each divisional period of life. Since this statement of facts is exactly the opposite of the preceding, but one with which the general public is hardly familiar, the tables, without some textual explanation, are likely to be understood by only the very small number of those who have made a study of vital statistics. But the most serious objection against these tables is the omission of detailed information regarding the number of deaths in the registration area by divisional periods of life in identically the same manner as the data are given in the form of ratios. It is difficult to understand why such an enormous amount of labor was expended upon the calculation of ratios of extremely limited usefulness when accurate rates per thousand living could have been as readily calculated and given to the public. For reasons best known to those in charge of the work the death rates for the registration area are given only for eight periods of life, whereas the ratios are given for twenty-five periods of life; yet much more useful results would have followed if exactly the opposite method had been adopted,— namely, to give twenty-five periods of life for each table of rates per thousand living, and eight periods of life for each table showing the ratios of deaths from different diseases at different ages.

A very useful note is appended to some of the fundamental tables in Part I, referring the reader to fundamental tables in Part II, where the original data regarding deaths can be found. It would have been desirable to have given similar information regarding the population data, and in addition some textual explanation as to the methods employed, with examples so prepared that even the reader but superficially familiar with vital statistics could readily understand the difference between the rates and ratios given in the final tables of Part I.

Repetition and Duplication of Facts.

Limiting the rates to registration areas, separate returns are given for five subdivisions: namely, registration cities as a class, registration States, registration cities in registration States, rural sections of registration States, and registration cities in non-registration States. There has thus been duplication of results and a great waste of space, time, money, and opportunity in this repetition of practically identical series of facts. To illustrate this point, it is only necessary to consider the general death rate of males, which shows as follows: registration record, 19.0 per thousand; registration cities, 20.0 per thousand; registration States, 18.1 per thousand; registration cities in registration States, 19.8 per thousand; rural sections of registration States, 15.8 per thousand; registration cities in other States, 20.2 per thousand. There are, therefore, included in registration area generally three separate groups returning practically identical results, as follows: 20.0, 19.8, and 20.2 per thousand. This subdivision is carried through the entire census volume, causing endless confusion, and serving, as far as the writer can judge, no useful purpose except the one of showing, possibly, the greater accuracy of the returns from registration cities in registration States. In any future report of this kind it would seem that the results need only be shown for the registration area and separately for registration cities and registration rural sections. This would give three divisions instead of six, and practically cut down the work and this volume of the census by as much as one-third, if not more.

Inadequate Population Data.

Section II, on population, contains a table on page xlii giving the details of the population by ages and classes. This table is defective in that it does not give the details regarding the ages of the Indians, Chinese, and Japanese, but includes these nativities in the general term "colored"; nor, as will later be pointed out, is this fundamental basis for subsequent rates given in any other part of the volumes on vital statistics and population. The ages are given by ten-year periods from fifteen to forty-four, a twenty-year period follows to sixty-four, while ages sixty-five and over are given in the aggregate. This method is faulty; for the facts should have been given by ten-year periods throughout, certainly to age seventy-five. Ages under one year are given separately, but again included in the period under five. This method also is faulty in that the population should have been given for ages 0–1 and 1–4, thus affording a definite measure of the mortality at two well-defined periods of life. The only argument in favor of the method adopted is that it follows precedent, and coincides with the English tables, giving the mortality at ages under five only. This objection could have been readily overcome by the publication of the population and mortality data by single years under five and by five-year periods after this age, thus making it possible for any one to form his own age combinations in whatever way required.

Births and Birth Rates.

Section III, dealing with births, forms a very useful contribution toward our knowledge of an exceedingly important subject, even though most of the conclusions are hypothetical and based on estimates and theoretical assumptions. Generally speaking, the conclusions have been arrived at with care; and the results are reasonably approximate to the truth. Thus, to quote one significant statement, the average annual rate of increase by excess of births is shown to be only 19.5 per thousand for those of native birth and native parentage against 36.5 per thousand for those of foreign parentage. The rate of increase for the colored was slightly less than that for native white parents, being estimated at 17.8 per thousand. An even more significant fact, however, is pointed out relative to the birth rate in the Northeastern States, where the average annual increase of those of native parentage is represented by only 3.8 per thousand against an estimated increase of 39.6 per thousand for those of foreign parentage. Natality forms an almost neglected chapter in American vital statistics, while yet a subject of profound interest and far-reaching practical importance.

Fecundity of Native Women.

In the Census of 1890 inquiry was made for the first time, of all women who were or had been married, as to the number of children born to them, and the number of these children living at the time the census was taken; but, unfortunately, no tabulation of these data was made, it is stated, for want of time.* Thus a series of facts of the greatest sociological and political value were kept from the public; and the Census Act in this respect was disregarded for reasons unknown.

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*A similar inquiry was made in the Census of 1900 (Population Schedule No. 1, cols. 11 and 12); but thus far the results have not been made public.

An inquiry of this kind was made by the census of Massachusetts in 1885; and results of considerable value were published in Volume II on social statistics. It was there shown, for instance, that of native married women of native birth 20.2 per cent. were without children, while of married women of foreign birth only 13.3 per cent. had never had children. For reasons equally perplexing no similar inquiry was made by the Massachusetts census of 1895, yet it is not going too far to say that, in the vast amount of statistical data pertaining to every conceivable aspect of the life of the population, no branch of inquiry could possibly be of greater importance than the fertility of native-born women of native parentage, the proportion of children to the married, the proportion surviving, etc., in comparison or contrast with similar facts for those of foreign parentage, destined in course of time to increase and multiply out of all proportion to the growth of the population of what may properly be called "native stock."

General Death Rates.

Sections IV and V deal with general death rates. Unfortunately, the fundamental facts regarding deaths by ages and classes have not been given in this section in a manner to correspond with the table of population. It must always be kept in mind that the deaths for the registration area and its subdivisions by States, cities, and rural sections form a separate body of facts, a thing totally apart from the general census data relating to population and deaths for the United States as a whole; and the first fundamental principle of any census analysis should be that no rates be published for which the corresponding actual data are not given in identically the same manner. As will be pointed out later on, the most serious defect of the census volumes on vital statistics is that a large amount of analysis is given to the public without the publication of the corresponding actual facts as to population and deaths, making it impossible for the critical reader to verify the accuracy of the rates or to determine the value and importance of the rates by the number of observations upon which the conclusions are based. The importance of this criticism will become more apparent upon considering the subject in a little more detail, for, as Mr. King points out, "In this country there are such marked differences in the composition of the population of different States and cities that certain primary characteristics of the population must be taken into consideration in comparing the general death rates with each other or with those of foreign countries or cities." While this point is readily admitted, the data themselves, making possible a thorough analysis and a rearrangement of different series of facts, are not given to the public; and they might, therefore, as well never have been collected. This is illustrated more fully in considering Section VI, where color and race in relation to deaths are discussed.

Race Mortality.

The crude death rates of five races are given for the registration area respectively as 17.3 per thousand for whites, 30.2 for negroes, 22.8 for Indians, 18.8 for Chinese, and 10.3 for Japanese. These death rates are misleading, and not comparable with one another as regards the Chinese and Japanese populations, which are almost entirely of adult ages,* and subject to a radically different mortality experience; and the rates given on page lxx, showing the mortality from certain causes by race and per hundred thousand of population, are equally misleading and practically worthless. If no other method could have been devised, the rates should have been deduced from the population, ages fifteen and over, and been limited to diseases affecting adult life. For instance, the conclusion that "the death rate of the Chinese from consumption (656.8) was very much higher than that of the

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*The proportion at ages twenty to sixty of the population at all ages is 88.6 per cent. for the Chinese, 78.4 per cent. for the Japanese, 42.3 for the Indians, and 45.6 per cent. for the native whites of native parents.

Indians (506.8)" is, in all probability, a misstatement of the facts, since the Indian population contains a large proportion of children under 5 (Indians, 14.5 per cent.; Chinese, 1.3 per cent.), among which the actual number of deaths from consumption is proportionately small. Death rates for the population of different races should have been given by age periods, in the same manner as given for the population by parentage on page xlii of the Introduction.

Omitted Fundamental Data of Population Distribution by Age and Race.

Another serious impairment of the value of the vital statistics is, however, the complete absence of the original facts relative to the population and deaths of the Chinese, Japanese, and Indians living in the registration area. By a curious arbitrariness, facts have been included and excluded, apparently without reasonable excuse. Thus, for instance, one would expect to find this information under Table 6, in Part II, where the deaths at each age by sex, color, and nativity are given; but the term "Colored" includes all races other than white, and, though the most elaborate details are given by sex and birthplace of mothers for the white population, no such information is given for the negro, Indian, Chinese, and Japanese populations. The data are given in some detail in Table 9, which, however, is for the United States as a whole, and not for the registration area. Here, again, for some arbitrary reason the data are only given for the colored as a group, and for the Indian and Chinese population, making it impossible to determine accurately the negro mortality and that of the Japanese. Table 10, which gives corresponding information of deaths in the registration area, only considers the colored as a group and the Chinese, making no mention of the negroes separately, of the Indians, and of the Japanese. While information is thus available for the deaths of the Chinese in the registration area by ages and causes, with distinction of sex, none is published relative to the corresponding population of Chinese in the registration area. Population Part II, Introduction, Table 21, gives the age distribution of the Chinese population, but only for the United States as a whole, and not for the registration area. Similar criticisms apply to the other races and to their combinations, and it is impossible to reconstruct the misleading tables given in the analysis. An accurate knowledge of the mortality and disease liability of the Chinese, Japanese, and Indian populations, is therefore impossible. This is a matter much to be regretted, since the data were evidently available; and they should have been given to the public rather than a large amount of useless repetition by subdivisions of registration areas and analysis based on gross death rates of very limited determining value.

Mortality by Nativity and Birthplace of Mothers.

Section VI also considers the mortality by general nativity and parent nativity and birthplace of mothers, and rates are given for a very large number of registration cities. Here, again, the rates are not given by age periods; and they are, therefore, in many instances, misleading, showing, for example, a foreign white mortality for Frederick, Md., of 45.6 per thousand; for Fresno, Cal., of 9.8; and for Jacksonville, Ill., of 61.1 per thousand. It is difficult to understand why these rates were included in the analysis, since Mr. King pointed out in the Introduction that only rates and ratios having a uniform numerical basis would be given, and that unsatisfactory rates and ratios would be omitted, but that the omission would be indicated by an asterisk. This table of death rates by colcr, general nativity, and parent nativity, could have been made of real value if the rates had been given in the same manner as the mortality rates for cities by age periods in Section VII.*

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* An illustration of the practical value of these statistics will be found in a paper by the writer on "Race and Mortality" in the *Medical Examiner*, New York, October, 1902.

The Relation of Age to Mortality.

Section VII discusses the relation of ages to deaths. While the relation of age to mortality is, without question, the most important factor to be considered in any analysis of vital statistics, the complex and heterogeneous character of the American population necessitates due consideration of race and nativity in its relation to age. While the table of death rates here given for a very large number of American cities, by eight periods of age, is the most valuable contribution ever made to American vital statistics, it falls materially short of its greatest utility by the unfortunate omission of death rates by color and nativity in cities where the former or the latter is of importance. The death rates by cities are the first complete statement ever made in American vital statistics of the comparative mortality of American urban communities with due regard to divisional periods of life. Only those who for years have had to content themselves with the badly arranged individual health reports of different cities can appreciate the value of this table, which in course of time must become the fundamental basis for all accurate comparisons of the mortality rates of American communities.

Crude Death Rates.

It is of the utmost importance that due regard should be given to inherent fundamental differences in the elements of the population of American cities, so that no serious injustice may be done to the interests of different communities. To illustrate this point, I may quote the rates given for New York City and New Orleans, showing that at ages twenty-five to thirty-four the mortality rate is 10.7 per thousand in the former against 20.1 per thousand in the latter; but, manifestly, since New York has a negro population of only 1.8 per cent. against 27.1 per cent. for New Orleans, it is grossly unfair to compare the two cities in this manner, even though it would have been found, on more careful analysis, that the white mortality of New Orleans considerably exceeds the mortality of New York. The actual differences, however, are not represented by the rates given.

Specific Death Rates.

Too much emphasis cannot be put upon this point, as one upon which hinges the entire future of American vital statistics; namely, the primary consideration of the elements of the population in different communities with due regard to age and sex. Whatever may be said against the use of crude death rates, which are as misleading as they are generally applied to unworthy purposes, applies with special force to specific death rates for different periods of life and for cities where other race elements than the native white go far toward the making up of the larger part of the population. To carry this point a little further, I may quote the death rate at the age period 25–34 for Natchez, Miss., given as 35.1 per thousand, against a death rate of only 9.0 per thousand for Newark, N.J.; but Natchez has a negro population of 58.1 per cent., whereas that of Newark forms only 2.7 per cent. of the total. It is this indifference to the age and race distribution of the population which has led to such false views in regard to the health of tropical cities, especially Havana, Cuba. If the mortality of Havana is analyzed by age periods and with due regard to color, it can be shown that, while the death rate of white males ages 40–49 is 16.2 per thousand in Washington, D.C., it is 31.8 per thousand in Havana, Cuba,—a very radical and material difference, wholly out of proportion to and not at all indicated by the crude death rate, which represents the local mortality as fairly satisfactory. The crude death rate very rarely, if ever, can be relied upon in making comparisons of the mortality of different communities, although it is a fairly satisfactory index factor of local conditions where the mortality of a given city is compared with itself for a period of years.

The Omission of Original Data of Population and Deaths by Age and Cause.

In no other part of the census volumes on vital statistics is the absence of the original data, and is the need thereof, more clearly illustrated than in the use of this table of death-rates at certain ages in registration States and cities. While it is true that the original figures as to deaths by cities and at age periods have been given in Table 5 of Part II, of vital statistics, no corresponding details regarding the population of the same cities are available excepting in so far as they relate to cities with more than twenty-five thousand inhabitants. Thus an effort made by the writer to construct tables showing the mortality, by ages, of cities on the lakes, in the interior, in the Southern States, and on the Pacific Coast, was futile, since for a large majority of the communities dealt with no corresponding information was available regarding the age distribution of the population. Nor would even this have been entirely satisfactory, since for an accurate statement of the facts the fundamental tables should give the population and mortality by age, with distinction of color and foreign born in all cases where either one or the other element forms more than 20 per cent. of the total population. This, of course, is an arbitrary percentage, and merely an approximate indication as to where the line could have been drawn. Since the population data of the different registration cities were used in computing the rates given on pages lxxx, etc., it seems little short of a statistical crime that the original data were not given to the public.

Mortality by General Nativity.

The death rates by certain ages or classes given on page lxxxii could have been consolidated by omitting the group called "Native," which, as is well known, contains such opposite factors as native whites of native parentage and native whites with one or both parents foreign. It would seem more useful to merely give, after the rates of the white population, the rate for the native whites of native parents and the native whites of mixed parents, and, in addition of course, the mortality of those of foreign parents. This would allow for the addition of other elements; as, for instance, the Chinese or Japanese, if sufficiently numerically represented in certain cities, like San Francisco, Cal., or Portland, Ore.

The Average Age at Death.

The average age at death is discussed in Section VII at greater length than it would seem proper to give to a practically discarded subject in vital statistics. The publication of this information in the form of a census bulletin led to a very large amount of misleading information in the public prints, so much so that, in a measure, it would seem more advisable to omit this series of data altogether. There certainly is not always a definite relation between an increase in the expectation of life and an increase in the average age at death, which may result from entirely different causes. The average age at death is of most value when given for specified diseases, as has been done on page lxxxvi, since it makes possible a readily intelligible estimate of the probable loss of life resulting from an undue mortality from certain diseases, or, as the case may be, from casualties or suicides. To illustrate a method in which the average age at death can be employed in dealing with certain social problems, we may take the average age at death of suicides. This is given as 43.6 years for the year 1900. The normal expectation of life at age forty-four is about twenty-four years; and, since there are approximately 10,000 suicides per annum in the United States, the net economic annual loss to the country as the result of suicide is 240,000 years of life. To this extent a statement of the average ages at death is quite useful; and it is, furthermore, a ready index factor of the probable age of greatest frequency at which deaths from different diseases or causes occur. Thus, for example, the average age at death of those who die from measles is given as 4.4 years, while the average age at death from consumption is given as 35.3 years, and that from cancer as 58.1 years; but, as stated, this factor is of very limited utility, and one most likely to be abused and employed improperly by newspaper writers and the general public.

Omitted Life Tables.

It would have been interesting if Mr. King had given some explanation why no life tables were calculated on the basis of the results of the Twelfth Census, as was done under the direction of Dr. Billings in connection with the vital statistics of the Tenth and Eleventh Censuses. While it is true that such tables were deduced from data not entirely satisfactory, they proved, in many respects, a valuable addition to the literature of the subject, and of relatively considerable importance in connection with numerous investigations. For certain States, like Massachusetts and New Jersey, the data would seem sufficiently complete to have warranted the introduction of a limited number of tables, at least for States and cities in the north-eastern part of the United States.

Mortality by Conjugal Condition.

The mortality by conjugal condition, as discussed in Section IX of Part I, forms a useful contribution to our knowledge of an exceedingly interesting and important subject. Since the relation of marriage to mortality was first discussed on the basis of statistical data by Farr before the Social Science Congress of 1857, numerous investigations have been made; but few have proven of value, since little attention was paid to the causes of death among the married, the unmarried, and the widowed.*

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* The practical value of statistics of mortality by conjugal condition is set forth in a series of papers by the writer on "Marriage and Mortality" in the *Spectator*, a New York insurance journal, for November, 1902. A very useful summary of several investigations into the same subject will be found on page 29 of the report of Körösy on the Mortality of Budapest for the period 1886–90. The best illustration of the method to be followed in inquiries of this kind is T. A. Coghlan's "Childbirth in New South Wales," containing tables showing the expectation of married life, the mortality, etc.

Mr. King gives five tables in his analysis, of which, however, only two are of determining value. In the first of the tables the error in the Eleventh Census is repeated by publishing crude death rates for the single, the married, and the widowed, without excluding the population at ages under fifteen, which, of course, forms a very large proportion of the "Single," as thus referred to in the table. It seems hardly necessary to draw attention to the fact that, in discussing the mortality by conjugal condition, the divisional line must be drawn at the age below which marriage is a practical impossibility or of exceedingly rare occurrence. To discuss the effects of marriage by comparing a population containing a vast number of infants and children with one exclusively limited to the conjugal state is as inaccurate as if we were to compare the liability of officers in the field to death in action with that of students at the West Point Academy. Thus the first table of the five is grossly misleading, showing, for example, the mortality of single males of all ages to be 16.6 per thousand against 16.4 per thousand for the married,—a difference of 0.2 per thousand in favor of the latter, making the mortality of the two classes practically identical. The conclusion based on the crude data would therefore be that the conjugal state did not have a perceptible effect upon mortality, when, as a matter of fact, the very opposite is the truth. Even by excluding persons of ages under fifteen, the real truth of the matter is not stated, since the mortality of single males of fifteen years and over is thus given as 11.6 per thousand, and of married males as 16.7 per thousand,—a difference of 5.1 per thousand in favor of the single, leading to the conclusion that the single enjoy a much lower mortality than the married at ages fifteen and over. The approximate truth is only ascertained when we consider specific age groups, as, for example, fifteen to forty-four, at which the mortality of single males is 9.4 per thousand, and of the married 8.1, showing a difference in favor of the married of 1.3 per thousand, leading to the accurate conclusion that married males during early married life are subject to a slightly lower mortality than the single. The difference becomes more pronounced at ages forty-five to sixty-four, at which single males have a mortality of 33.3 per thousand against a death-rate of the married of 20.4 per thousand, showing a difference in favor of the married of 12.9 per thousand. At ages sixty-five and over the single males experienced a mortality of 107.8 per thousand against that of the married of only 75.0 per thousand, the difference in favor of married males being 32.8 per thousand. Since general statements in the public press, and even in medical discussions, usually ignore the mortality by divisional periods of life, the first table given in the census returns is the one most likely to be quoted, and the one which gives rates and conclusions diametrically opposite to the truth. The fallacy is repeated for the five subdivisions of the registration area, and thus a considerable amount of valuable space and time has been wasted upon entirely misleading and useless data. Instead of the rates by subdivisions of the registration area, the report should have given rates by shorter divisional periods of life, if possible by ten-year periods and only for the registration area as a whole. It certainly can serve no useful purpose to learn whether the mortality of the married, single, and widowed, is higher or lower in the group of registration cities than in a group of cities in non-registration States; but it would have served a large and most important interest, had the fundamental data of population and deaths been given for the registration area by conjugal condition and by ten-year divisional periods of life as high as eighty-five years of age.

The third table of this series carries forward the same fundamental fallacy involved in the first in that crude death-rates are given to show the mortality from certain diseases by color, sex, and conjugal condition without distinction of age. Attention to the elements of the population, but especially to the diagram given on Plate 9 of Population, Part II, would have made clear to the Census Office the fallacy of giving the mortality of the single and married without distinction of age, from diseases such as cancer and tumor, for example, which affect almost exclusively adult periods of life. Thus I cannot better illustrate the fallacy involved in this table and the erroneous conclusions to which the same must lead than by the statement that according to the third table, given on page xciii, the mortality of single females from cancer and tumor is 18.2 and that of the married 116.4 per hundred thousand with the implied conclusion that married women, as a class, are subject to an enormously higher mortality from cancer and tumor than the single. But, as a matter of fact, the mortality from cancer depends largely upon age; and the fourth table of the series shows conclusively that at ages forty-five and over single females are subject to a higher mortality from cancer and tumor than married women.

Disease Classifications.

While discussing this third table, it may also be pointed out that suicides are given fourth place in the number of diseases or causes of deaths discussed in detail, followed by "General Diseases — A," whereas the general practice in other parts of the reports has been to precede all diseases by the group called "General Diseases — A," and place suicides after accidents and injuries where, in the standard nomenclature of diseases or causes of death, they properly belong. This arbitrary shifting of diseases from one position to another prevails throughout the analysis of the vital statistics in Part I, but it is only proper to add that the error is the result of a repetition of Dr. Billings's methods in the Census of 1890.

Valuable Rates of Mortality by Conjugal Condition.

The fourth table of the series, showing death rates from selected causes by age and sex, is an exceedingly useful one; but, unfortunately, the rates being limited to large divisional periods of life, they are not as useful as they could readily have been made, and without sacrifice of space, if other useless and misleading data had been omitted. While this table is of value, it gives evidence of hasty compilation and ill-considered treatment in that the important group of diseases of the respiratory organs is entirely omitted,* and, incredible as it seems, in a discussion of the mortality by conjugal condition no information is given regarding the mortality of married and single women from puerperal affections. While this group of diseases is referred to in detail in the section on mortality in its relation to season, it is entirely omitted from the section where, if anywhere, it properly belongs. While fully recognizing the inherent difficulty of obtaining absolutely accurate information regarding puerperal mortality among unmarried women, still an attempt in this direction would have been more useful than the entire omission in this section of the mortality of women from the results of pregnancy. Nor has this information been given in the fundamental tables following the Introduction; and thus the, perhaps, most important aspect of an interesting problem of human mortality is entirely ignored. In the fourth table, suicides are placed in their proper position; that is, at the end of the table; but neither alcoholism nor accidents and injuries are included in this table, which, as previously stated, is one of the two tables of really determining importance given in this section.

The fifth table of this series has the heading, "Proportions of deaths from certain causes per 1,000 deaths from known causes." Even the most superficial student of vital statistics has a reasonably definite idea as to what is meant by this heading, and he concludes naturally that what this table is intended to show is the proportion of deaths from specified causes of the mortality from all causes by conjugal condition. This, however, is not by any means what the table really shows. It required a re-examination of the fundamental data to make it clear to the writer just what was implied in this tabular summary; and, whatever criticism regarding omission or commission may be applicable to other parts of the census volumes on vital statistics, the most serious objection applies to this table, which is completely misleading and unworthy of being introduced into a work making pretensions to scientific accuracy and usefulness.

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*The same omission occurs in the report on the Vital Statistics of the Eleventh Census, Part I, p. 59.

What the Census Office really shows in this table, but what is not at all implied in the heading, is the proportion of deaths by conjugal condition of persons dying from different diseases or groups of diseases at different periods of life: thus, for example, of every one thousand single males dying from consumption in the registration area, 883.6 died at ages fifteen to forty-four, 99.7 at ages forty-five to sixty-four, and 16.7 at ages sixty-five and over. What useful purpose such a table can serve the writer fails to understand, but that it leads to absolutely wrong conclusions is readily apparent when the mortality of the widowed is compared with that of the single; for then this table would lead to the assumption that any given disease, no matter which may be selected, is proportionately much more fatal or much more common among the latter than among the former. I cannot do better than cite a single illustration of the misleading conclusions imposed upon the public: —

MORTALITY OF SINGLE MALES FROM SUICIDE.

Ages	15-44	45-64	65+
Rate per 1,000 of population	15.2	56.0	77.3
Ratio per 1,000 deaths at each age	792.9	170.3	36.8

Thus, according to the fourth table, represented by the rate given, the mortality from suicide among single males increases with advancing age; but, according to the fifth table, represented by the second line, showing for the total mortality the proportion of deaths at different periods of life, the mortality from this disease constantly decreases with advancing age.

Season and Mortality.

The mortality, by months or seasons, in relation to deaths, is briefly discussed and illustrated by four diagrams. No explanation is given as to the method adopted of arriving at the monthly death rate, the assumption being that the rates have been calculated from the population as determined for the census year, with no correction for the monthly decrease in population backwards to June, 1899. Nor is it stated whether the actual number of deaths stated for different months were adjusted to eliminate inaccuracies due to the unequal length of the months, the importance of which has been so clearly pointed out by Dr. Abbott in "Vital Statistics for Massachusetts for 1856–95." As Dr. Abbott remarks, "It is quite plain that an estimate of population which can be applied in calculating the death rate in January and February cannot reasonably be applied to the same purpose in November and December, since the annual increase in the population is thus disregarded."

Erroneous Monthly Death Rates.

The need of corrected and adjusted data in any statement of the mortality by months becomes at once apparent when it is pointed out that the death rate reported by the census for February is 143.6 per hundred thousand against a rate for January of 146.8, when, as a matter of fact, the mortality during February is higher than the mortality during January, when proper correction is made for the differences in the length of months. This point being one of quite considerable importance, I have calculated the population for the different months of the census year; and the results are shown in the following table, in which the monthly mortality has been corrected and adjusted on the basis of 30 5-12 days per month. The table shows, in addition to the corrected rates per hundred thousand of population, the unadjusted rates as calculated by the Census.

Corrected Monthly Mortality Rates for Registration States: All Ages, Males and Females.

	Corrected Estimated Population.	*Corrected Deaths.*	*Corrected Rates per 100,000.*	*Census Rates (Unadjusted).*
June, 1899.	17,140,188	21,811	127.3	123.2
July "	17,167,612	25,826	149.8	150.8
Aug. "	17,195,080	24,944	145.1	145.7
Sept. "	17,222,593	23,240	134.9	132.0
Oct. "	17,250,149	21,385	124.0	125.0
Nov. "	17,277,749	21,415	123.9	121.1
Dec. "	17,305,393	23,027	133.1	134.5
Jan., 1900.	17,333,082	25,127	145.0	146.8
Feb. "	17,360,815	27,226	156.8	143.6
March "	17,388,592	31,485	181.1	183.9
April "	17,416,414	30,876	177.3	174.5
May "	17,444,280	25,340	145.3	148.0

This table shows conclusively the fallacy of publishing monthly death rates without making the necessary correction for an increase in the population and for the inaccuracy resulting from the unequal length of different months, but especially of February. In calculations of this kind, however, where different methods are likely to be employed in arriving at a given result, it is of the utmost importance that the method made use of should be definitely stated, and, if possible, illustrated by examples.

Misleading Graphic Illustrations.

The method employed of exhibiting graphically the mortality rate by months is the one which has been used for many years, but, from the writer's point of view, not to the best advantage. The area representation around the centre of a circle gives a curiously shaped figure, the importance of which is practically beyond the grasp of the average reader. While the technique of graphic illustrations cannot be discussed here, it may not be out of place to point out that, if the rates had been laid off on the twelve equal segments of the circle by means of heavy black lines, a much more definite view of the variations in the death rate by months would have been given.* A further and very serious defect of these illustrations is that the scale to which they have been drawn is not uniform, while the size of the circle is always the same, leading of course to wrong conclusions, unless all the facts are taken into account.

Locality in Relation to Mortality.

Locality in relation to deaths is discussed at some length, but the remarks are confined to the twenty-one grand groups into which the United States have been divided for the census investigation of mortality. This aspect of the general problem of human mortality in a vast country like the United States is one of very considerable importance; and it would be next to impossible to do entire justice to the matter, even though a whole volume were devoted to the subject. The treatment is, on the whole, satisfactory, considering the inadequacy of the data for non-registration sections; but an exceedingly valuable addition could readily have been made if the registration cities in different sections of the United States had been combined in such a manner as to show, for example, the mortality rate of lake cities, of Southern cities with distinction of color, of Western cities with distinction of altitude, of Eastern cities with distinction of foreign parentage, etc. It would, however, have been readily possible for any one to construct such a table, for a number of purposes of great value, had the Census Office given the original data as to population and deaths by age, race, and parent nativity for the cities of the registration area. This, as previously pointed out, was unfortunately omitted; and for a larger sphere of public utility the volumes are inadequate.

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*For a graphic illustration of this method see Mayr's "Die Gesetzmässigkeit im Gesellschaftsleben," Munich, 1877, p. 78. See also the annual report of the Surgeon-General of the United States Navy for 1884, diagram facing page 261. An early appreciation of this point as applied to census vital statistics will be found in Kennedy's preliminary Report on the Eighth Census (1860), p. 27, where he points out that "a correction has been made for unequal months by first adding one-thirtieth part to the deaths in April, June, September, and November, and two twenty-ninths to the deaths in February, thus changing all to the majority standard of 31 days before casting the proportions."

The rearrangement of the cities by altitude, longitude, latitude, average rainfall, average temperature, and average humidity, would also have been readily possible if the fundamental tables of population and deaths had been given to the public. By just so much as this fundamental principle of census inquiry and publication is disregarded, by just so much the published volumes fall short of the highest possible degree of public utility. I may illustrate the importance of this point by calling attention to Map No. 8, showing the relative proportion of deaths from malarial fever in different State groups. Almost the entire area south of latitude 35 degrees north and west of longitude 100 degrees west forms one immense malarial belt, where human mortality is at its lowest value and where both whites and colored die out of all proportion from one specific and well-recognized cause, when compared with the more healthful sections of the country. No problem of human life is more constantly misunderstood than the actual mortality of the white population in Southern cities; and the most misleading statements are often given to the public.

Thus of recent health publications for Southern cities there is one in the Shreveport, La., *Times* of June 8, 1902, referring to the city as "one of the healthiest in the entire South," further supplementing this statement by the remark that "to the citizens of Shreveport and those familiar with the city this is an axiom, a self-evident truth." The city finds fault with the publication of the Census Office to the effect that Shreveport had a death rate in the census year of 45.5 per thousand, this being attributed to an over-stated mortality and to an under-stated population. A special municipal census was ordered, showing a population of 24,324 against a census population of 16,013. Regarding the accuracy of this enumeration, the *Times* published "the affidavit of the mayor." The enumeration was made by a company compiling a local directory; and, by various means usual to such enterprises, the official death rate was reduced to 15.7 per thousand for residents and 21.9 for non-residents. A comparison is then made with other Southern cities, showing, of course, that Shreveport "is the most healthful in a Southern latitude."

Mortality of Northern and Southern Cities.

There can, however, be very little doubt but that the census returns for Shreveport were at least approximately correct; and the data as set forth in the following table show the mortality per thousand living at different periods of age for Washington, D.C., New Orleans, La., and Shreveport, La.: —

ILLUSTRATION: DEATH RATES OF SOUTHERN CITIES PER 1,000 OF POPULATION.

	0–5	*5–14*	*15–24*	*25–34*	*35–44*	*45–64*	*65 +*
Washington, D.C.	81.0	7.0	9.7	11.2	13.0	27.3	103.3
New Orleans, La.	71.2	6.1	14.2	20.1	25.1	42.6	119.4
Shreveport, La.	112.4	13.1	33.2	36.0	45.7	58.9	175.5

It will be observed that the mortality of Shreveport per thousand living at each period of life is very much in excess of the normal mortality of Washington, D.C., and of New Orleans, La. Of course, the aggregate death rate for both races combined is materially affected by the proportion of negro population. Thus while Washington, D.C., has a colored population of 31.3 per cent., and New Orleans of 27.2 per cent., the proportion for Shreveport, La., was 53.4. The excessive death rate, therefore, is very largely the result of the excessive proportion of colored population, not taken into account in the census table of death rates for cities, published on pages lxxx–lxxxii. While a more detailed analysis would have shown the white mortality of Shreveport to be certainly as high as the white mortality of New Orleans, it is unjust and unfair toward any community to publish death rates of this kind, even if given by age periods. All this does not affect the real fact that a great many Southern cities, Shreveport probably included, are subject to a much higher mortality among the white population than cities located in more temperate latitudes. The case quoted will illustrate the absolute necessity of calculating death rates per thousand at different age periods with distinction of race in Southern cities and with distinction of foreign parentage for the principal cities of the North.

Causes of Death.

The causes of death are discussed at considerable length in Section XII, which takes up the larger part of the analysis. The Census Office has followed the method adopted for the Eleventh Census, and has incorporated in its discussion most of the faults which so materially impaired the value of the earlier contributions to census vital statistics. The proper criticism of this section would take up a very large amount of space in view of the fact that nearly every important problem of vital statistics is involved in the methods and results here set forth.

The census makes use of the antiquated nomenclature employed by Dr. Billings instead of the Bertillon system now made use of by most of the registrars of vital statistics of American States and cities and foreign countries. This is a most unfortunate error at the outset of the discussion, since it leads to a great deal of confusion and the omission of important vital facts, which would have been impossible, had the Bertillon system been adopted. In one of the fundamental tables (Vital Statistics, Part II, Table 7) the census office gives 219 causes of death in alphabetical order, and this table in a measure acts as a check upon the tables employed in the analysis; but here, again, we meet with the omission of details regarding ages at death which, for a large variety of purposes, would have been exceedingly useful to those interested in the mortality from diseases other than those represented by the more important causes of death. Of course, any alphabetical arrangement of diseases must fall short in that specified causes of death forming a group must needs be distributed over different sections of the alphabetical table, as, for example, in the case of deaths from puerperal affections, where we find five minor subdivisions, which, of course, must first be added before an intelligent opinion can be arrived at regarding the total mortality of this well-defined group of diseases of women. However, the difficulty of combining the different minor causes of a larger group of causes by age periods would have been comparatively slight, while the entire omission of so important a correlated element as the ages at death by minor specified causes must prove a serious disadvantage. The tables as given by regional divisions of the country cannot possibly be as useful as tables showing for each of the two hundred and nineteen causes of death the age distribution by five or at most by ten-year periods. Table 8, of course, gives this necessary information for the more important causes and groups of causes, but to cite an illustration: if for medical purposes it be desirable to ascertain the ages at death of the 804 persons who died from biliary calculus, the information is not to be found in Vital Statistics, Part II, Table 8, page 232, where one would naturally expect to find the details pertaining to this disease, the more so since elsewhere the details as to ages are given for urinary calculus, causing an aggregate mortality of only 431 deaths in the United States against the 804 caused by biliary calculus. The latter disease is, therefore, as a cause of death, about twice as important as the former, for which all the necessary details are given by age and sex.

An elaborate table of deaths from each principal disease and class of diseases is given on page cxiii of the analysis, and in a general way the arrangement adopted by Dr. Billings has been followed, leading to a no small amount of confusion and the omission of quite a number of important causes of death. This table could have been materially improved if the details for subdivisions of the registration area had been omitted, and if, in place thereof, the actual data regarding the population and deaths had been given in addition to the corresponding rates for the registration area as a whole, for the registration cities, and for the rural part of the registration area.

Among the more important omissions from this table mention may be made of hydrophobia, causing 123 deaths,—a small number, it is true, but of comparatively considerable importance, and an item likely to be looked up as a matter of reference by many who are otherwise but slightly familiar with vital statistics. The disease was incorporated in the corresponding table of the Eleventh Census (Vital Statistics, Part I, p. 224), and it could readily have been incorporated here. Smallpox, causing 3,484 deaths in the United States during the census year, is also omitted from this table.

Arbitrary Deviations from Adopted Standards.

The actual number of deaths occurring in the registration area is not given in this table; and, therefore, constant reference to fundamental Table 8 is necessary in order to bring out the real importance of the facts dealt with and the probable accuracy of the conclusions arrived at. Of other omissions of no small importance, mention may be made of locomotor ataxia, which should properly have been referred to in the group of nervous diseases. More details should also have been given in the group of circulatory diseases, where only three specified diseases are dealt with instead of the usual six or seven. Poison is included in "General Diseases — B"; but no distinction is made as to deaths resulting from chronic industrial poisoning, such as lead, arsenic, etc. The deaths from poisoning, the result of accidental causes, should have been separately stated and included in the group of accidents and injuries. Information is given (p. 228, Part II) as regards deaths from lead poisoning (113 deaths); but there must certainly have been deaths resulting from other forms of industrial poisoning, such as arsenic, copper, zinc, etc. The error of including deaths from "other" poisoning under "General Diseases — B" is illustrated by the fact that there were 3,390 deaths from this group of causes, many of which, of course, should have been included under general accidents and injuries. The seriousness of the omission of the mortality from affections connected with pregnancy from the tables by conjugal condition is illustrated very forcibly by the rate of 26.2 per hundred thousand for the registration area against a mortality of 12.6 for diseases of the female organs of generation; and thus a group of diseases causing but one-half the number of deaths in the registration area is dealt with in considerable detail, while a cause of twice the importance is entirely omitted from the analysis and from the fundamental tables of mortality by conjugal condition. Since at least 9,699 deaths were due to these causes in the United States, the importance thereof cannot be exaggerated. The mortality from accidents and injuries could readily have been given in more detail; and some detailed reference should have been made to the mortality from mining accidents, for which 1,303 deaths were returned in the United States.

Changes in Disease Classification.

Most serious objections apply to the frequent and unaccountable rearrangement of the causes of death in the different tables employed in the analysis. It would require too much space to deal with all the numerous variations and vagaries in disease nomenclature, some of which have been already pointed out, as, for instance, in the tables relating to conjugal condition, where in one table suicide is given the fourth place, while in the table following it is given at the end. It would seem to the writer that, as a matter of convenience, the tables could have been much more readily arranged in accordance with a uniform method of disease nomenclature; but it is only proper to add that Mr. King simply adopted the tables of Dr. Billings in the reports of the Eleventh Census where identically the same errors of omission and commission occur. Thus, for example, in the Eleventh Census no reference is made to deaths in pregnancy in the mortality by conjugal condition, and the information is likewise omitted from the Twelfth Census. The same applies to the diseases of the respiratory organs and also to the curious position given to the mortality from suicide, all of which illustrations are merely to the point that there was a blind following of precedent, which is deplorable in a work of this kind, which must needs be before the public as a standard work of reference for many years before the information of the subsequent census will become available.

A considerable number of diseases are discussed in detail, partly by tables, partly by diagrams, and partly by textual discussion. The work of the specialist would have been made much easier if the heading of the pages had been made to indicate the specific diseases dealt with on the page, or at least if proper catch-titles had been adopted instead of the use of ordinary type. Thus reference to any specific disease makes it necessary for one not thoroughly familiar with the order in which the diseases follow one another to go over a large number of pages and pick out the specific cause of death about which information may be required. It would not have been at all difficult to have made some reference to the disease dealt with at the heading of the page; and thus the specialist would have been saved a very large amount of labor, while the utility of the volumes would have been materially enhanced. This criticism applies with even greater force to the headings of the tables themselves, where there is a complete absence of any indication as to the diseases dealt with. Thus, for example, the mortality from measles as given by months is headed "Deaths by Months"; but it is invariably necessary to refer backwards to the text to find what disease is covered by the table, and, instead of disposing of the matter by a single line, from three to five lines of text are consumed in making an unnecessary explanation. But the main objection is the waste of time imposed upon the one making use of the reports and the increased liability to error in the use of the tables. A blunder of this character imposes very considerable burdens upon those who make use of the reports.

Diagrams showing the mortality by months in cities and rural sections of the registration area are continued throughout the volume in the discussion of almost every disease, while, as already pointed out, in many instances the rates and ratios by months are entirely misleading,—in that for February the data are not adjusted for the shorter number of days; but they are also otherwise misleading, and for general purposes entirely needless. They take up a very large amount of space which could have been used to better advantage; and it may not be out of place to add that, generally speaking, they are not a credit to the engraver's art. To whatever purpose, however, they may be applicable, the reader will find it an exceedingly arduous task to trace in each case the disease specifically dealt with, for the only headings to the diagrams are the meaningless words "Cities" and "Rural."* But, as stated, the rates themselves are inaccurate and misleading, certainly for all diseases for the month of February.

Useful Maps of Disease Prevalence.

The maps which accompany the textual discussion of most of the diseases are very interesting; and, being of uniform color, they are not the eyesore which disfigured so many of the illustrations of the similar reports of the Eleventh Census. The writer, however, questions the expediency of using State groups to indicate the regional differences in the mortality instead of using the grand groups as illustrated in the map which forms the frontispiece of Part I. Here, again, we may express our regret that the registration returns of cities were not combined in such a manner as to give information for sections of the country, as, for example, in the discussion of the mortality from typhoid fever, when it would have been of value to have the average rates for the cities drawing their water supply from the lakes in contrast to the cities of the interior regions of the West or of the extreme South. It would also have been of considerable value if, instead of the meaningless subdivisions of the registration area, given in elaborate detail, with distinction of sex, rates had been calculated for at least the more important cities, with due regard to age, color, and parent nativity. On these most important points the analysis by causes of death is silent.

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* This is also a repetition of the method of the Eleventh Census. See Vital Statistics, Part I, p. 244.

Regional Mortality Data.

The mortality of the grand groups is shown in tabular form on the basis of ratios of deaths from specified causes to one thousand deaths from known causes; and, in the absence of more accurate information, the table is a useful one for reference. However, for some curious reason (following Dr. Billings's report for 1890), the subdivision for rural sections precedes, in this table, the subdivision for cities, while in all the other tables throughout the volumes on vital statistics the rates and ratios for cities invariably precede the corresponding information for the rural sections of the registration area. This point is, apparently, one of small importance; but, when it is taken into account how small an amount of time the physician, sanitarian, or any other person, interested in a particular problem of human mortality, can give to the examination of such data, it is of the utmost importance that everything should be done to avoid confusion of ideas and misleading conclusions likely to result from unnecessary changes in the position of the facts given in the analysis. It is the very object of an analysis to attain this purpose, but it was certainly not accomplished in this particular case.

Mortality from Specified Causes by Divisional Periods of Life.

The mortality from specified causes by ages is shown in the form of a table which has for its basis the total number of deaths from the same cause at all ages, showing, for example, the proportion of deaths, at any given age, from consumption to the mortality from consumption at all ages. While such a table is of value, the true measure of the occurrence of this disease and its true age incidence would have been better shown if rates had been given per thousand living at each age period, or at least per thousand deaths from all causes at each period of life on the basis of Table 25. In other words, the fundamental table from which the summary tables are deduced is 24 in Part I, showing the ratio of deaths at each age per thousand deaths at known ages from each cause, whereas the more accurate and useful method would have been, if rates could not have been calculated per thousand living at different periods of life, to have used Table 25, showing the deaths from each cause per thousand deaths from known causes at *each age*.

Another serious fault to be found with this tabular presentation of the facts pertaining to specific causes by ages is that no space intervenes between the data for single years under five and the groups of years above this age. The tables are illustrated by means of diagrams, which are, however, for males and females combined, for which no corresponding rates are given in the analysis, making necessary their rearrangement and recalculation on the part of those who wish to test the accuracy of the graphic illustrations. Here, again, we meet with evidence of the unfortunate adoption of Dr. Billings's methods in that the diagrams give information from age ninety-five downward, while the tables give the corresponding information from age one downward. A hasty consultation of the work would therefore lead to the conclusion that the proportion of deaths from consumption at different periods of life follows an entirely different law than is established by the ratio tables incorporated in the textual discussion.

The Proper Object of Graphic Illustrations.

Graphic illustrations can serve only one purpose, and that is to make it unnecessary on the part of the reader to undertake the laborious task of re-examining original data or the corresponding rates and ratios. A graphic illustration is intended to impress instantly upon the observer a definite fact determined with reasonable accuracy and representing the result of final analysis on the part of a qualified expert. It can serve no other purpose, and therefore by just as much as an illustration falls short of this conception it is reduced to a mere item of filling space or worse, to a means of leading the reader astray in his conclusions. This criticism applies to most of the illustrations given in the census volumes, but especially to the graphics attempting to show the mortality by months from specified causes, and the distribution of deaths from specified causes by divisional periods of life. This criticism also applies in no small measure to the maps, which should have given the mortality for regional divisions on the basis of grand groups instead of giving the data by State groups.

The Mortality from Cancer.

There is not the space to discuss in detail the mortality from various diseases and the possibilities of more useful methods with due regard to local conditions and the specific nature of the more prominent causes of death. In only one instance has the general rule of stereotyped textual discussion been departed from; and that is in cancer, a subject which also received detailed treatment in the vital statistics of the Eleventh Census. The probable actual and relative increase in the mortality from this disease makes it a matter of great importance to physicians and others that the facts ascertained should be fully set forth on the basis of a large number of observations representative of general conditions. This has been done to a considerable extent, and the mortality is shown to special advantage by means of maps and rates on the basis of the population for the registration States.

The first and most serious objection to the cancer mortality table, giving evidence of ignorance of, or indifference to, the real nature of the problem, is found in a table of rates showing the proportion of deaths from cancer of certain organs at all ages. This treatment must needs lead to false conclusions, although the error is, in a measure, minimized by supplementary information giving the data by divisional periods of life. The table of cancer, by organs affected, should have been given by conjugal condition, since, taking only one illustration, the mortality from cancer of the breast is unquestionably materially affected by the conjugal state of women dying from this disease, which, I may add, is undoubtedly on the increase in the United States.* The only American registration reports giving information on this point are those of the Health Officer of the District of Columbia; but, unfortunately, the ages at death are not given. It is but quite recently that the results of an elaborate investigation into this subject have been published in Germany and Holland,† and the census volumes could have contributed much more useful information than has actually been the case. The special treatment by organs affected is carried through several tables, in all of which, unfortunately, a column is given showing the mortality at all ages. Let us show how entirely misleading a statement of the mortality from cancer without regard to age can be, in quoting from the table of cancer of the uterus. Here it is stated that the death rate of foreign white women is 24.5 per hundred thousand, while the rate for colored women is given as 20 per hundred thousand, leading to the conclusion that the foreign white women are more liable to this affliction than those of negro parentage. As a matter of fact, the very opposite conclusion is the truth; and, if examined by divisional periods of life, it is shown that, without exception, colored women have experienced a higher mortality rate from cancer of the uterus than white women of foreign parentage.

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* For a discussion of the statistics of cancer of the breast see a paper by Dr. Frederick S. Dennis, Journal American Medical Association, Oct. 19, 1901.

† "Bericht über die vom Komitee für Krebsforschung erhobene Sammelforschung," Jena, Gustav Fischer, 1902.

Misleading Cancer Death Rates.

It must always be kept in mind that tables of this kind are consulted by a large number of busy practitioners and others who cannot be expected to re-examine into the original facts nor to assume, the practically incredible, that misleading rates of this character should be published and printed by government sanction under government authority. Returning once more to Mr. King's statement in the Introduction, that, to prevent improper use of the data, especially of abnormal rates, he would omit data insufficient for the computation of reliable rates. There is no excuse for publishing crude death rates, which can only lead to the confusion of the less-informed general public and to an increasing distrust of rates and ratios which yet, after all, are the only method and the only means by which the importance and true meaning of a vast amount of closely inter-related facts can be made intelligible.

Important Omission of Occupation Mortality Data.

A useful addition to the tables showing the various causes of death could readily have been made if, for important causes, a table had been added showing the disease prevalence in different occupations on the basis of rates per thousand living at specified periods of life, just as this has been done for persons of foreign parentage. Thus, to illustrate this point a little more fully, it is shown, for instance, on the basis of the mortality returns pertaining to respiratory diseases, that persons of Italian parentage have experienced a death rate of 7.1 per thousand from this group of causes against a mortality of only 2.1 per thousand for persons of native parentage. And in the same manner the industries and employments in which respiratory diseases, in part, perhaps, as the result of exposure to extremes of heat and cold, are most common, could have been pointed out. On reference to a subsequent section of the report it is shown, for instance, that pneumonia causes a mortality of 2.6 per thousand among clergymen, while causing a death rate of only 1.2 per thousand among bankers and brokers. For some curious reason, in the discussion of respiratory diseases a table is incorporated, showing the mortality by conjugal condition, which should have been given in the discussion of conjugal mortality in another portion of the report.

Deaths from Diseases Peculiar to Women.

Diseases of the female organs of generation are discussed as a class, when a brief statement of the more important diseases forming this group would have been a useful addition to the tables. Affections connected with pregnancy are discussed in some detail, but, as previously pointed out, for some inexplicable reason, without reference to conjugal condition. Such details could also have been given to advantage as to the different puerperal diseases, especially as to abortion, post-partum hemorrhage, extra-uterine pregnancy, etc. The rates per thousand are calculated for the entire child-bearing period, that is, fifteen to forty-nine. This is a most unfortunate limitation, since there are unquestionably very important differences in the mortality from puerperal affections at different periods of life. The rates should have been given by ten-year periods from fifteen to forty-five, and by a twenty-year period from forty-five to sixty-four. Such rates would have been readily comparable with other rates for the purpose of affording a measure of the real importance of the mortality from this group of causes. As given (that is, fifteen to forty-nine), the rates are comparable with none in other parts of the census analysis. But the most serious omission is the absence of any information regarding the deaths in pregnancy by conjugal condition.

The Mortality from Accidents and Injuries.

Accidents and injuries are considered as a group; and no detailed analysis is made of the different causes, which, of course, are a matter of very considerable economic and social importance. In the many discussions of Employers' Liability Acts and Government Insurance Protection of workingmen in dangerous trades and industries, a detailed analysis of this kind would have proven a very useful addition to a very limited body of facts.* The discussion of accidents and injuries as a group serves absolutely no practical purpose, since the deductions cannot be applied to the solution of any given problem, being derived from radically different fundamental conditions, and giving rates and ratios of no definite value. As previously stated, deaths from poison have not been included here, having been incorporated in the group termed "General Diseases — B." But it may be added that in the detailed discussion no reference whatever is made to this group of diseases and accidents which, from a medico-legal point of view, is certainly deserving of considerable attention, and also from the standpoint of industrial hygiene in any inquiry relating to the occurrence of chronic industrial poisoning. The absence of a definite distinction between deaths from chronic poisoning and accidents of this nature is a further indication of the non-critical nature of the final analysis. It is hardly necessary to say that deaths from accidental poisoning should have been included in the group of accidents and injuries. A still more curious and important omission in the analysis is the mortality from homicide; and, while a most elaborate discussion follows regarding deaths from suicide, no reference whatever is made to deaths from homicide in the section on accidents and injuries, nor is there a textual reference or explanation made of the reasons which prompted the omission of such an important cause of death.

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* See "Report of the Committee on Insurance and Loans," David J. Lewis, chairman; also, "Senate Bill No. 183, Session of the Maryland Legislature, 1902."

Occupations and Mortality.

For immediately practical purposes Section XIII is, without question, the most useful portion of the report. This subject was first introduced into the reports of the Eleventh Census, previous discussions and references to the mortality by occupations having been of no practical importance. The limitation of the data to the registration area, and the calculation of accurate rates per thousand living at different periods of life, makes the basis and the conclusions at least approximately reliable. In the aggregate, information as to the mortality by occupations is given for 5,575,745 males and 1,587,874 females; but detailed information is given for eight groups of occupations subdivided into sixty specified groups for males, while for females detailed information is given in regard to fourteen employments, or groups of employments. The fundamental tables of deaths differentiate between the white and colored, making a useful distinction. The analysis, however, gives no separate rates by occupations with distinction of race.

The analysis of Mr. King does not improve the reports of Dr. Billings; and, although the statement is made that "the classification of occupations used in the present census is the same as that employed in the Eleventh Census, except that it includes all reported occupations, whereas in 1890 it included only certain specified occupations," a careful examination of the facts does not support this contention. In the report of Dr. Billings detailed information is given for eighty-nine specific employments of males against sixty employments given by Mr. King. An addition, however, is made for the table of the Twelfth Census in that data are given for persons employed in "Other Occupations of this Class," by which the value of rates for groups of occupations is, of course, enhanced. Conclusions based on groups of occupations, however, are generally misleading.and of no practical importance. The tendency of recent times is illustrated in the improved decennial reports of the Registrar-General of England, being more and more toward detailed classification and information for specific trades and industries. Thus what is gained in one direction is more than balanced by the loss experienced in other directions; and important employments for which useful information was given in the Census of 1890 are, for reasons not stated, combined in groups, leading often to radically false conclusions.

Omitted Occupations Specified.

Stenographers and typewriters, wine and liquor dealers, nurses, undertakers, bleachers, bookbinders, brass-founders, coppersmiths, brick and tile makers, clock and watch repairers, jewellers and opticians, electrotypers, gas-works employees, gunsmith, locksmith, bell-hangers, harness and saddle makers, paper hangers, paper-mill operatives, photographers, potters, rubber factory employees, wheelwrights, fishermen and oystermen, pilots, quarrymen, telegraph and telephone operatives, and telegraph and telephone linemen are all omitted as specified occupations, and included in the occupations not specifically stated, or grouped with other and in a measure similar occupations. The list of omitted occupations has been given in full as an indication of the serious character and nature of the changes introduced, which certainly cannot be looked upon as an improvement of the census analysis.

Problem of Industrial Hygiene.

From the standpoint of industrial hygiene there are, for example, no more important occupations than potters and rubber factory operatives, for both of which occupations useful data are to be found in the census report for 1890; but no information is available on the basis of the Census of 1900.

Fishermen and oystermen form a group of well-defined laborers, with reference to which data are of considerable commercial importance; but they are included in the meaningless group of sailors, pilots, fishermen, and oystermen, representing certainly three well-defined groups of employments, all subject to different rates of mortality and specific disease or accident liability. Thus, for example, the comparative mortality figure for fishermen and oystermen, according to the Census of 1890, was 543, while for pilots it was 630, and for sailors 2,276. To combine such unlike employments into one group is merely to produce a figure which has absolutely no determining value. Another illustration is supplied by the combination of miners and quarrymen, two absolutely unlike occupations, especially from the point of view of accident liability. According to the Census of 1890, the comparative mortality figure of quarrymen was 469, while that for miners was given as 1,127; and to combine two such unlike occupations is again the mere production of a figure which has absolutely no determining value, but the use of which must lead to false and mischievous conclusions. It was reasonably to be expected that the census report of 1900 would materially increase the number of specific occupations dealt with in the section discussing the relation of occupation to mortality; but, as previously pointed out, instead of eighty-nine employments discussed in the Census of 1890, only sixty are dealt with in detail in the Census of 1900. To make this matter worse, the details are not given in the fundamental tables; but a vast variety of heterogeneous employments are grouped in a purely arbitrary manner, filling space to no advantage and resulting in conclusions of no practical value.*

Misleading Occupation Death Rates.

The first table of the occupation mortality analysis attempts to show the general death rates of males in sixty specified occupations. Comparison is made with similar rates for 1890, which must have been specially calculated, since they are not in Dr. Billings's reports. Although the misleading nature of such comparisons must be evident to any one who has made himself at all familiar with the fundamental principles of vital statistics, a blunder which invalidates the utility of most of the earlier contributions to vital statistics is here repeated, and incorporated in a most important public document. Since no correction is made for the differences in age distribution in widely different employments, the published rates do great injustice to employments entirely healthy, while giving a favorable position to employments the health conditions of which are quite the opposite. This point is readily illustrated, if comparison is made of the mortality of farmers and printers, the former of which, according to the census, experienced a mortality "at all ages" of 17.6 per thousand against a death rate of 12.1 per thousand for printers. Hence, apparently, printers enjoy a much lower mortality than farmers. Of course, the very opposite is the case. The inaccuracy of the rates is the result of radical differences in the age distribution of the two employments, there being 11.5 per cent. of farmers at ages sixty-five and over, while among printers there are only 1.5 per cent. living at this age period. These facts are set forth in the following table, in which a comparison is made of the crude death rates and of the corresponding death rates fot divisional periods of life: —

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* See "Scope and Method of the Twelfth Census: Critical Essays by Members of the American Economic Association," p. 502, paragraph 9.

THE COMPARATIVE MORTALITY OF FARMERS AND PRINTERS (RATES PER 1,000).

	Proportion of Population at Ages 65+	*Crude Death Rates (all ages over 10)*	*Death Rates at Specified Ages.*			
			15-24	*35-44*	*45-64*	*65+*
Farmers	11.5	17.6	3.7	4.6	13.2	96.8
Printers	1.5	12.1	5.0	12.3	20.0	108.8

It is shown by this table that, while apparently the mortality of farmers was 5.5 per thousand higher than the mortality of printers, as a matter of fact, when the proper comparison is made, the mortality in this occupation is considerably below that of printers at all periods of life. This illustration will suffice to show the misleading character of published rates arrived at by a faulty method, which, in view of all that has been written on this subject within the past thirty years, is inexcusable. The fact that rates, scientifically arrived at, are published in other portions of the analysis, does not detract from the force of this criticism; for, as previously pointed out, the census volumes are consulted as a work of reference by a large number of persons who cannot be expected to make a critical examination of all the rates and ratios published in different portions of the work.

Changes in Occupation Mortality, 1890–1900.

No explanation is given as to the probable causes of remarkable changes in the "crude" mortality rates for different occupations during the decade 1890–1900. Thus it is shown that the mortality of clergymen has increased from 18.2 to 23.5; of bankers, brokers, etc., from 4.7 to 11.8; of millers, from 17.3 to 26.6; of sailors, pilots, etc., from 22.0 to 27.7; finally, of stock raisers, herders, etc., from 19.4 to 32.1 per thousand. Remarkable decreases are shown for United States soldiers and sailors, the rate having been reduced from 22.7 to 12.1;* of boot and shoe makers, from 15.3 to 9.4; and of tailors, from 16.5 to 11.8 per thousand.† It is a very important question as to whether this indicated increase in the mortality of the occupations named has actually taken place or whether the changes in the rates are merely the result of a more accurate and complete collection of the vital statistics.

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* According to an official statement of the Surgeon-General of the United States Army the death rate of the United States troops was 8.7 per thousand during 1890 and 22.7 during 1900, including troops serving abroad. The death rate of the United States Navy was 9.0 per thousand during 1890 and 8.9 during 1900. Of course there is a considerable difference between the mortality of the population classed as soldiers and sailors and that of troops and marines actually in service, and a still greater difference if inmates of soldiers' and sailors' homes are included in the census enumeration. But it is highly improbable and next to impossible that the mortality of the army and navy combined should have decreased from 22.7 to 12.1 per thousand during the ten years under observation. It would have been valuable to have added a table showing the mortality of the army and navy as determined by the service medical statistics for the decade 1890–1900; and a very useful table, readily obtainable, could have been added, showing by ages the mortality of inmates of soldiers' homes during the same period. Such a table would prove of considerable value in discussions of army mortality and pension problems. Unfortunately, the army and navy medical statistics are far from being as accurate, and sufficient in detail to be as useful, as the interests they are supposed to serve emphatically demand.

† This is probably the result of the influx of Russian and Polish Jews, who monopolize this trade and who more than balance the effect of an unhealthful occupation by an exceptional degree of vital resistance.

For certain occupations it would have been better if rates had been entirely omitted, even though the actual data regarding deaths by ages and causes would still have been of value. Thus, for example, the mortality of commercial travellers and of nearly all the employments of women is evidently understated and for practical purposes misleading.

The second table of this section gives the necessary fundamental facts of population and deaths by occupations and age periods with distinction of sex. This table is of considerable value and illustrates points previously discussed, for the absence of such fundamental data materially impairs the value of all analysis. The method followed of giving the actual facts for each occupation specifically discussed is excellent, and should be employed in the discussion of every important problem of vital statistics in the different sections of the analysis. The age grouping adopted is not satisfactory in that the periods should have been for ten years instead of twenty at ages under sixty-five, and the ten-year subdivisions should have been carried forward until age eighty-five. For certain occupations, especially the most unhealthy, it is of importance to know the specific death rates at periods of life above the age sixty-five. The age period sixty-five and over is entirely too long, and twenty-year periods at younger ages are insufficient to establish the actual differences in the mortality rates of persons employed in different occupations. The method employed by the Registrar-General in his supplement to the fifty-fifth annual report on the mortality of England and Wales could have been followed to advantage; or the actual facts regarding population and deaths could have been given by ten-year periods, together with the corresponding rates.

But a more serious omission in the section on mortality by occupations is, however, the omission of ages at death and corresponding rates of mortality per thousand living from specified diseases. A table is given for a number of specified employments, showing the mortality per hundred thousand from specified causes; but this table is misleading for occupations with a widely different age distribution. Thus, for example, the statement that the mortality from consumption among clerks and bookkeepers is 398.0 per hundred thousand against a rate of 182.2 for males in professional employments is, in all probability, misleading, since in the former the proportion of persons aged fifteen to twenty-four is 39.4 per cent. against 15.8 per cent. living at this age period among men in professional employments. In other words, the mortality from specified diseases possibly the result of occupation should be set forth by divisional periods of life in exactly the same manner as for the mortality from all causes. While such rates are not calculated in the reports of the Registrar-General, the fundamental data are given, making it readily possible for any one to compute the relative mortality from different causes in specified occupations. The omission indicated is a most serious one, and impairs very considerably the practical utility of the report in that the problems of industrial hygiene depend for their solution almost entirely upon accurate detailed vital statistics with due regard to divisional periods of life.

Omitted Important Employments.

As previously stated, no information is given regarding certain important occupations for which mortality data would have been of the greatest possible value. Thus, for instance, the reports contain no information regarding the mortality of potters, rubber-workers, match-workers, persons employed in the manufacture of explosives, paid firemen, etc., all employments sufficiently numerically represented in the registration area and for which accurate vital statistics are of great practical value. The main object in reports of this kind should be to furnish information likely to be useful in scientific and social investigations undertaken to determine the health conditions of the population in recognized dangerous or unhealthy industries. The reports as published contain little information of this character either in the fundamental tables or in the final analysis.

The term "Others of this class" merely adds to the confusion experienced in the practical use of the tables published, since no information is given as to the different employments included under this meaningless and misleading term.

Combinations of employments have been made, resulting in rates which cannot be applied to practical purposes. Hotel keepers should not have been combined with boarding house keepers, since the former almost invariably engage in the sale of intoxicants, while the latter do so but very rarely. The same criticism applies to the grouping of saloon keepers with restaurant keepers, the latter being generally persons who do not engage in the handling or sale of intoxicating liquors. It is, no doubt, as the result of this grouping of employments that the reported death rates of saloon keepers, etc., are so favorable to this occupation, which, without exception, on the basis of more trustworthy data, is known to be an employment subject to an excessive mortality at all periods of life.* Sailors and soldiers of the United States should not have been combined, since the two groups are subject to different rates of mortality.† Brewers should not have been combined with distillers and rectifiers, since it is highly probable that the manufacture of malt liquors has a less serious effect upon health and longevity than the manufacture of distilled and spirituous liquors. Glass blowers and glass workers are misleading terms, since, as a matter of course, glass blowers are glass workers in every sense of the word. If a subdivision was possible, detailed information should have been given regarding blowers, which occupation is claimed to be subject to a higher mortality than other employments in the glass industry. It would have been a useful contribution to our knowledge of the subject if the mortality of glass workers had been stated by subdivisions; that is, for men employed in the manufacture of general ware, window and plate glass, the three main divisions of the industry, subject, unquestionably, to different rates of mortality. Miners and quarrymen are combined into one group, resulting in death rates which are entirely and radically misleading. As far as available information goes, the former are subject to a much lower mortality than the latter.* The information should have been given separately for metal miners, since the mortality rates of the two main branches of the mineral industry are also quite different. The inclusion of four distinct occupations into the group sailors, pilots, fishermen, and oystermen, leads also to conclusions entirely at variance with the actual conditions as they affect each of the specific employments. Thus, for example, the mortality of sailors is, without question, considerably in excess of the mortality of pilots and oystermen. Of stock raisers, herders, and drovers, represented as having experienced a mortality of 32.1 per thousand, it is stated that "the number of persons (966) and deaths (31) was so small that the rates have no significance." Since this is a self-evident truth, it would have been but proper to omit this occupation entirely from the analysis, and give in place thereof data regarding paid firemen (of whom there are about 15,000 in the United States), telegraph and telephone linemen (14,765), potters and earthenware workers (16,140), and rubber workers (21,866), all occupations subject to a special disease or accident liability, regarding which it would have been of great public value to have had accurate information.

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* See "Transactions of the Actuarial Society of Edinburgh," vol. ii., Nos. 6 and 8 (1888), and vol. iv., No. 5 (1897), being essays on the mortality of persons engaged in the sale of intoxicating liquors. Published by T. A. Constable & Co., Edinburgh.

† During the five years 1891–95, during a condition of peace, the death rate of the United States army was 6.6 per thousand, and of the Navy 8.3 per thousand.

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* At ages 45–54, for example, according to English data for the period 1890–92 the general death rate of all miners was 19.6 per thousand. and of quarrymen 25.3 per thousand. For coal miners alone the death rate at this age period was 19.4, for copper miners 24.3, for tin miners 33.2, and for lead miners 23.9 per thousand,— indications of quite considerable differences in the mortality and specific disease liability of men engaged in the mining of coal and the different metals.

Textile workers are reported upon under the title "mill and factory operatives," including in the aggregate 150,783 males and 162,392 females. It would have been of considerable value if this large group of widely different employments had been given at least by broad divisions of cotton, wool, and silk workers. It may not be out of place to add that an important contribution to our knowledge regarding the health of persons employed in the different branches of the textile industry is made annually in his reports by the medical officer of health of Blackburn, England. A similar useful contribution regarding the health of persons employed in the manufacture of cutlery as polishers, grinders, etc., is made annually by the medical officer of health of Sheffield, England, in his reports on the health of the city. The two reports referred to illustrate the usefulness of trained officials in reporting upon local sanitary conditions, supplementing observations by carefully compiled and intelligently analyzed occupation mortality statistics. The section on occupations, therefore, falls very materially short of what this most important branch of vital statistics could readily have been made if due consideration had been given to the real elements involved in the discussion. An exceptional opportunity of adding materially to a very limited body of facts regarding some most important industrial and medical problems was not made use of.

Part I: Fundamental Tables 1 to 28.

Table 1 gives the deaths by conjugal condition, by specified causes, color, age, sex, and birthplaces of mothers. The facts are given for the United States, the registration area and its subdivisions, for the non-registration area, and in detail for each registration State. A mass of needless data occupies seventy-three pages, which could have been reduced to less than one-third if a more critical treatment had prevailed.

As previously pointed out, the deaths of the "Single" are given at all ages and at ages under fifteen, including, as a result, infants and children outside of the conjugal state. Comparisons are, therefore, erroneous and radically misleading, if based on the first two columns, including the deaths at ages under fifteen. The two columns for "All ages" and "Under fifteen" should have been omitted, and the space gained could have been used to give the deaths by ten-year periods after sixty-five until age eighty-five. Thus the value of Table 1 would have been largely increased, while misleading and needless data would have been omitted. The heading of this table, "Deaths from Certain Diseases and Classes of Diseases," is inaccurate in that the causes of death specified include accidents, homicides, and suicides, which of course, properly speaking, are not diseases at all. The group "General diseases—A" could have been left out as serving no useful purpose, while deaths resulting from pregnancy could have been added in the space gained. It would have been of great value if full details had been given in this table of deaths by conjugal condition for all the more important diseases peculiar to women, since data of this nature are not obtainable from local or State registration reports. Cancer and tumor should have been given separately, and the cancer mortality should have been given by organs affected. The omission of this information and the previously pointed out omission of deaths, as the result of pregnancy, very materially impair the value of what would otherwise be an exceedingly useful contribution to vital statistics.

The deaths by conjugal condition are also given by birthplaces of mothers; but, since these deaths are for all ages, they are useless, since the "Single" include infants and children under age fifteen, and a comparison of the mortality of the single and married, the widowed and divorced, on the basis of birthplaces of mothers, would be radically misleading. To determine the possible relation of nativity to conjugal mortality, separate tables should have been given for each of the twelve principal nativities specified in identically the same manner as this information is given for all nativities combined. All investigations of this kind, at least in their present state, aim to establish general principles; and for this object the data for the registration area as a whole would have been amply sufficient. More than two-thirds of the seventy-three pages are taken up with needless details for subdivisions of the registration area and the different registration States.

Table 2. The mortality by occupation is set forth in twelve tables, which take up one hundred and seventy-four pages. Here, again, the fact is ignored that present investigations into the mortality by occupations are entirely for the purpose of determining general principles; and for such investigations all details regarding subdivisions of the registration area, or information for the individual registration States, are of very small, if any, value. The fundamental distinctions are color and sex; and the former forms a useful addition to a very limited knowledge of the differential effect or the possible relation of race to occupation mortality. Unfortunately, no corresponding information is given regarding the population by color in the registration area for which the data regarding deaths by occupation are available, and hence no rates can be calculated. It is probably for this reason that the subject is not discussed in the analysis, but some reference to the subject would have been of interest. The method of giving full details for the colored by ages at death should have been followed with regard to at least twelve of the principal nativities. The data as given are useless in that the divisional periods of life are omitted. The general age distribution of deaths by occupation is defective in that the divisional periods end with sixty-five. The information should have been given for ages sixty-five to seventy-four, and seventy-five to eighty-four; and for these two additional columns space could have been found by omitting ages under fifteen and ages unknown. At ages under fifteen there were

only 2,834 deaths of males for which occupations were returned out of a total of 278,147, and the omission of this age group would therefore have been a matter of small consequence. The details are given for sixty specified occupations or groups against eighty-nine returned in the Census of 1890. If all the needless and meaningless tables for subdivisions of the registration area had been omitted, more than sufficient space would have been found to give complete details for at least one hundred specified occupations. The group "Others of this class" should have been made to include as few employments as possible, but it is here made to include 7.6 per cent. of the total number of male deaths reported by occupations.

There are twelve tables giving the mortality by occupation, with distinction of sex and color and full details for all the subdivisions of the registration area. First the data are given for both white and colored, then for the white and colored separately. The first of these three tables is needless, and it would have been more useful if instead the occupation mortality *rates* had been given for the white and colored population separately. What useful purpose it can serve to give occupation data for the United States, the registration record, the registration cities, the registration States and cities in registration States, the rural parts of registration States, the registration cities in other States, the non-registration record, and, finally, for all of the registration States separately, is beyond the comprehension of the writer, whose special work has been considerably in the direction of occupation mortality investigation.

While the first series of six tables gives the details by ages at death, the second series gives the details by causes in exactly the same manner; that is, by race, sex, and for the needless subdivisions of the registration and non-registration areas. The information is given for eighteen specific causes of death, or groups of causes, while additional data are given for cancer by five specified organs. Two unnecessary columns are added, giving the deaths from "All other causes" and "Unknown causes." While the details of cancer data are of some value, they are less useful to those interested in occupation mortality statistics than information as to the different forms of accidents and injuries. The only sub-group for this most important branch of occupation mortality statistics is burns and scalds; while no reference is made to the mortality from mining accidents, railroad accidents, accidents by machinery, etc., all of which would have been exceedingly useful and of determining practical value. No information is given as to the mortality from lead poisoning, which, while a comparatively unimportant cause of death, is of very considerable importance in considering the specific disease liability of plumbers, painters, glass workers, etc. The column showing the deaths from suicide should follow "Other accidents and injuries," and not precede this group. The fundamental error, however, which underlies the construction of this table, is that the information is not given by divisional periods of life; and thus the data are of very little value, since the possible effects of occupation on health cannot be traced by crude data of this kind. The deaths should have been given for not less than twenty specified causes or groups of causes by occupation and divisional periods of life in the manner as the deaths have been returned from all causes, at all ages, in the first six tables of the series. A ready illustration as to how the facts should have been returned is, curiously enough, found in another portion of the census volume; namely, Table 17, showing the deaths from cancer of males engaged in various occupations with distinction of age. This table, which will be referred to in the proper order, is one of the very best, from a technical point of view, which appears in this census volume. It gives real facts of real value in exactly the manner most useful for practical purposes; and the divisional periods of life are returned by thirteen specified groups of ages, amply sufficient for most purposes, although ages seventy-five and over could have been subdivided, and the terminal period of life could have been made eighty-five and over by omitting the needless column of "Unknown." If the meaning of the criticism of numerous tables in the census report is not readily intelligent to the reader, reference should be made to Table 17 on page 277 of Part I. Tables such as there given for cancer should have been given for all specified occupations, and not less than twenty causes and groups of causes of death instead of the meaningless and misleading tables of aggregate mortality by subdivisions of the registration and non-registration areas. The adoption of these suggestions would reduce the space occupied to two-thirds, or perhaps one-half; while the practical value of the work would be very materially enhanced.

There are few subjects of greater practical importance before the American public at the present time than the problem of industrial hygiene, and it is a sorry fact that nearly all our knowledge regarding the diseases of occupation is derived from English or Continental sources. The treatment of the subject in American medical works, by American writers, is entirely inadequate; and a painstaking investigation, covering ten years of issue of two leading medical journals, has proven to the writer the almost complete absence of useful contributions by qualified medical experts to our knowledge of occupation mortality. The only creditable exception to the general indifference to this subject is found in the State of New Jersey, where the State Board of Health and the State Bureau of Labor Statistics have, at different periods, published exceedingly useful investigations on the mortality of persons in the different important industries of the State. What can be done on even a very limited scale in this direction is shown by the results of an occupation inquiry made by the State Bureau of Labor Statistics of New Jersey during 1901 into the health conditions of men employed in hat manufacture and glass works. Useful information, although quite difficult of analysis, is to be found in the reports of the Bureau of Labor Statistics for 1889–95, where the trade life of workingmen is reported upon in considerable detail. The same criticism of general indifference to industrial hygiene applies to the reports of factory inspectors, which are of comparatively small practical value in contrast to the extremely interesting and valuable reports of the factory inspectors of the United Kingdom. The best work possible in this direction cannot be done until the national vital statistics relative to the mortality by occupation are reconstructed and made to conform to the demands of the specialist, who is in a position to make practical use of the data collected.

The details regarding the mortality from cancer are given in Tables 14–18; and in many respects this contribution to our knowledge of an exceedingly complex, interesting, and important subject is a most useful addition. The subdivision by ages, as has been already pointed out, is excellent in that the facts are given for thirteen divisional periods of life. Since most of the cancer mortality falls on the adult ages, more minute divisions of age periods after forty-five are of great value. The usual criticism applies to this table,—that needless information is given with regard to subdivisions of the registration area, which can hardly serve a useful purpose.

Table 15 gives the mortality from cancer by conjugal condition, and the table is properly limited to the registration record. It would have been of interest if the facts had been given regarding the Chinese, Indians, and Japanese, since we know practically nothing of the occurrence of cancer, by age and organs affected, among these elements of our population.

Table 16 gives useful details of the mortality from cancer by organs affected, but a most unfortunate and serious omission is made in that the conjugal condition was not considered. As elsewhere pointed out, the conjugal condition is no doubt, in a measure, connected with special forms of cancer, particularly among women; and other data could have been much more readily omitted than this important aspect of a most important problem. Space for this additional information could readily have been found by omitting the deaths for certain unimportant organs, as, for example, cancer of the brain, causing only twenty-seven deaths, and cancer of the eye, causing only eighteen deaths, in the entire registration area.

Tables 17 and 18 show the mortality from cancer by occupation with distinction of sex and divisional periods of life. Having already been referred to, they require no further discussion.

Table 19 is really the fundamental table of the census, and should have been given immediately after the analysis. The table shows the "Population, Births, Deaths, and Death Rates at Certain Ages and Deaths from Certain Causes by Sex, Color, General Nativity, and Parent Nativity." This table takes up two hundred and sixty-nine pages, which contain a mass of exceedingly useful information. The arrangement of the first part of the table, giving the mortality by ages, is faulty in that deaths at "All Ages" should precede deaths at "specified ages." The table illustrates the great possible usefulness of the census vital statistics, provided proper attention is given to details, and fundamental facts regarding population and deaths are given to the public. The age grouping adopted is under one and under five. No explanation is given why the facts for other divisional periods of life were not published in the same manner, since the data would have been of the greatest possible value. Most of the objections to the faulty tables and more faulty analysis would have been met by a rearrangement of this table on the basis of at least six divisional periods of life, including in each case, for each State, with distinction of sex, color, nativity, etc., the facts as to population and mortality at different periods of life. The six divisional periods could have been 0–1, 1–4, 5–14, 15–44, 45–64, 65+. If these divisional periods of life had been given, a double page would have been necessary; but sufficient space could have been found for the additional data by omitting needless data in other portions of the two volumes. Part of the table is taken up with a return of deaths by seventeen specified causes or groups of causes. Since this information is given in the aggregate, without distinction of age, the data are of very limited practical value. It is but proper to add, however, that to give this information by ages would have taken up a very considerable amount of space. Still, it would seem that, if proper discrimination had been used and large periods of life had been adopted, information of practical value could readily have been given. For example, diseases of children could have been returned for the population at ages under fifteen; diseases of middle life, such as typhoid fever, consumption, etc., could have been given for ages fifteen to forty-five; while diseases affecting older ages could have been given for forty-five and over. No corresponding rates need have been calculated, since for special requirements the original data would have been sufficient, provided both population data and death by age periods had been published. The number of diseases classified is inadequate in that two columns for "Unknown causes" and "All other causes," as well as "Old age" (which is a meaningless term), take up space which should have been given to other important causes of death. The space could have been used for suicides and accidents and injuries. The arbitrary disease classification is once more made apparent by the position given to diseases of the nervous system, which follow diseases of the liver and precede diseases of the urinary organs,— a position which is entirely out of harmony with the general principle adopted in the census volumes and any recognized system of disease nomenclature. Heart disease is combined with dropsy,— an antiquated method for which a proper explanation is wanting. In the Massachusetts registration reports, dropsy is given in connection with diseases of the urinary system; but, since in the general disease classification the position of dropsy is in the group of "General Diseases — D," it should not have been combined with heart disease, and thus give in combination a specific cause of death with an indefinite one. Table 19, however, is one of the most useful in the census volumes, and one which, for purposes of reference, will prove quite valuable. It may be added that useful rates for the adult population can be worked out by subtracting the deaths and population under five from the deaths and population at all ages. The rates will be found useful, especially for cities where local mortality conditions are materially affected by race and nativity.

Tables 20–28 are termed "ratio tables," although the three first are "rate tables" giving the equivalent mortality per hundred thousand of population. These tables have already been referred to in the review of the analysis, and space is not available for further detailed discussion. The principal objections are against the headings, which are not sufficiently intelligent and at times misleading. It would have been desirable to have added the words, "Read from left to right" or "downwards," as the case might be, to assist those not thoroughly familiar with different methods of presenting the results of such investigations. A brief textual explanation of the method used, with possibly an example, would have been of great value; and a precedent for the adoption of this suggestion will be found in Population, Part I, Table 41. Such explanations as there given regarding the nature, objects, and possible intricacies of the table, should have been added in each case where the methods or results are likely to be misunderstood.

Table 25 is an exceedingly useful one, if properly employed; and the divisional periods of life are given in full to age ninety-five and over. It is a matter of serious regret that the corresponding information regarding the population in the registration area was not also given to the public.

Tables 27–28 give the proportion of the aggregate population at each specified age per hundred thousand of population at known ages. These tables are quite useful for purposes of reference, although similar facts are available in the population volumes. It would have been more useful if, in place thereof, information had been given regarding the population of the registration area with full details regarding sex, color, general nativity, and parent nativity. For the entire registration area a table should have been given for the population by single ages, and corresponding information should have been given for the mortality. Such a table has never yet been introduced into the census, and its introduction into local health reports is exceedingly rare.* There would appear, however, strong reasons for the introduction of such tables into future reports, since, for a variety of purposes, details of population and deaths by single ages are exceedingly valuable; and, as long as no rates are calculated, the results are not likely to mislead the general public. The facts are principally of value to those who are interested in the construction of life tables and investigations as to the possible misstatement of age and the approximate accuracy of registration returns or who for special purposes may require age groupings other than those adopted in the general text.

Part II: Fundamental Tables 1 to 13.

Part II of the report contains thirteen fundamental tables, of which the first gives information relative to "Population and Deaths by States and Territories at Each Census, 1850 to 1900." This table is likely to be consulted by many persons not generally interested in the details of the census investigation; and any possible conclusions derived from this table must needs be misleading, since as stated in the Introduction (Part I, p. xii), previous to 1880 only enumerated deaths were returned,† and any possible conclusions based on the earlier returns must of course be misleading, and not comparable with the returns for later years. No textual explanation accompanies the tables in this volume, although some explanation proves necessary in nearly every case to avoid erroneous conclusions.

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*See Table No. 9, Joseph von Körösy's "Die Sterblichkeit der Stadt Budapest," Berlin, 1901.

† This statement is incorrect; for Kennedy, in his preliminary report on the Eighth Census, page 24, states as follows: "The deaths in nearly all of the principal cities are annually registered and reported chiefly in connection with the boards of health. Whenever the deaths could be more correctly ascertained from these local records, the census marshals were authorized to copy them. But on examination they appear to have rarely availed themselves of the privilege, with one large exception, mentioned below. . . . In Massachusetts such an organization is in successful operation, and our marshals appear in this instance to have resorted to the State registry. The resulting proportion of deaths exhibited in the foregoing summary is noticed to be relatively greater in Massachusetts, but the disparity will be rightly ascribed to the better conditions under which the permanent registry operates rather than to any marked difference of climate compared with that of the adjoining States."

The second table is of a similar character, showing the mortality by sex in each State and Territory since 1870. This table is also very likely to be improperly used; and, while of value as a matter of record, it should have been accompanied by some textual explanation.

The third table shows the deaths in each State and Territory by color and race for the census year of 1900; and, while of value for purposes of reference, it should have been accompanied by a few explanatory remarks calling attention to the untrustworthy character of the returns for non-registration States. It is not stated why information regarding deaths in Alaska was omitted. If the data were not collected, this fact should have been indicated by a foot-note.

Table 4 gives the deaths by color, general nativity, parent nativity, and sex for States and Territories, and registration cities. It would have been more useful if information regarding the colored population had been given in detail, showing the deaths of negroes, Chinese, Indians, and Japanese separately.

Table 5 gives the fundamental data regarding the mortality in States, Territories, and registration cities by age periods with distinction of sex. This table is an exceedingly useful one, but its value would have been very materially increased if the deaths had been returned by color and foreign parentage. By omitting a number of less necessary tables, space could readily have been found for the practically indispensable data regarding the mortality by age and race for cities having a large negro population.

Table 6 gives the deaths at each age by sex, color, general nativity, parent nativity, and birthplaces of mothers. This is a most useful and important table, which is subdivided into sections, first giving data for the country as a whole, then for the registration record by subdivisions (some of which, however, are not necessary), followed by detailed information regarding the mortality in different States, both registration and non-registration. This table is very useful, and in combination with preceding tables the data would have been of the greatest possible value if the corresponding information regarding the living population at different periods of life, with due regard to sex, color, nativity, etc., had been given in the aggregate for the registration area, and perhaps for the registration cities.

Table 7 gives the deaths from each reported cause by States, State groups, and registration cities. This table is useful for reference in that the deaths from different causes are given in alphabetical order; but some textual introduction should have been added to caution the reader against possible errors of judgment in that closely related diseases, under alphabetical headings, are necessarily given in different parts of the tables. The alphabetical arrangement could have been improved in some instances, as, for instance, in the classification of rupture of the bladder under the letter "R," where it, of course, is not likely to be found without careful scrutiny of the entire table, the assumption being that it would be given under letter "B," with the qualification following the word "Bladder." The mortality from suicide is given in six subdivisions, whereas it could have been much more conveniently combined into one group. This subdivision of suicide, according to method, is carried through all the census tables, leading to a very considerable waste of space and the needless computation of a large number of rates and ratios. This necessitates in all general considerations of the subject a rearrangement and recomputation of the necessary proportional equivalents. The same blunder was made in the census reports of 1890, proving a source of considerable annoyance to those who make use of the data. In other words, method in suicide is a very subordinate element compared with the aggregate mortality from this cause, which is no-where stated in the census except in Section XII of the analysis. Since no such elaborate details are given for any other cause, excepting cancer, it seems rather curious why the facts should have thus been given with regard to suicide. Accidents should have been given in their alphabetical arrangement under letter "A," with due regard to the subdivisions of this group of causes; but this, unfortunately, has not been done, and any one wishing to ascertain from this table the aggregate mortality from accidents and injuries must first extract, with no small difficulty, the different items under which the returns for this group of deaths are given. The elaborate subdivisions adopted for this table regarding States, State groups, and registration cities, is hardly necessary in view of the very small number of deaths reported for a large number of the 219 specified causes.

It would have been desirable to have had some textual explanation as to the method adopted in classifying deaths reported as having been due to different causes. Certainly, not less than 5 per cent. of all the deaths returned to registrars are reported as due to more than one cause; and, the subject being one of very considerable interest to those who aim at accurate registration, the method adopted by the Census Office would have been of interest and value. This table takes up 110 pages, whereas it could readily have been condensed into one-fourth of this space.

Table 8 shows the deaths in the United States, in the registration area, and in each State and Territory by groups of diseases. The unscientific nomenclature of diseases follows the Eleventh Census, although not in general use, and discarded by Mr. King in the introductory part of Vital Statistics, Part I. Mr. King there states that in future publications the Bertillon classification will be adopted, but he gives no reason why the method was continued in the present reports. This table is very useful for a variety of purposes, and can readily be employed in special investigations by the recalculation of ratios per thousand deaths at specified periods of age.

Table 9 is identical in construction with Table 8, the deaths are given only for the United States as a whole, with distinction of color. This table is limited to the white population, the colored population as a group, the Indians and the Chinese; but it would have been a useful addition if separate data had been given for the negro population and for the Japanese, even though for the latter the number of deaths recorded in the entire United States, according to Table 3, was only 117. Since definite conclusions are advanced regarding the mortality of the Japanese in Section VI of the analysis, it would seem but proper that the necessary fundamental data from which the conclusions were arrived at should have been given to the public.

Table 10 is also identical with Table 8 in that the mortality by age and cause and classes of deaths is given by color and race for the registration area. Here, however, the information is given only for the colored as a group and for the Chinese, data regarding the Indians and Japanese being omitted. It is true that the total number of deaths of Indians in the registration area was only 319, and of Japanese 86; but since the deaths in these populations were given in Section VI of the analysis, and death rates from certain causes by race, with corresponding reflections upon the high mortality of Indians from consumption and the low mortality of Japanese from this disease, it would have been but proper to have given the fundamental data from which the conclusions were derived. As elsewhere stated, no corresponding information regarding the Chinese, Indian, and Japanese populations of the registration area by age periods is given in the fundamental tables of the population volumes; and it is therefore impossible to calculate accurately the mortality of the three races for the purpose of scientific comparison with the mortality of the white population.

Table 11 gives in elaborate detail, with proper distinction of age periods, the mortality of white persons in the registration area by birthplaces of mothers. It is not stated why this information was not also given for the United States; but the table as given is a very useful one, and a valuable contribution to our very limited knowledge regarding the mortality of the population of foreign parentage in this country. Conclusions regarding the mortality of the foreign born are misleading unless based upon rates derived from the living population at different periods of life, since the foreign born are mostly of adult ages. It is therefore of the utmost importance to consider the mortality of the American population on the basis of parentage; and it may not be out of place to add that this fundamental principle was first recognized by Dr. Snow in the registration reports of Providence, R.I. A useful subdivision could have been introduced by giving separate returns of the mortality of persons whose mothers were of French-Canadian birth in distinction from those who were of English-Canadian birth. The mortality of the two elements of the Canadian population is radically different, the former being subject to a very high death rate of children under five years of age, while the latter enjoy a comparatively low mortality at this period of life, while for both elements the mortality is low at adult ages.

An unfortunate omission is the mortality of the Portuguese, as this nationality forms a considerable portion of the populations of Massachusetts, Rhode Island, and California, far more so, for example, than the French population, since there are in Massachusetts only 3,905 persons born in France against 13,453 persons born in Portugal. A very useful distinction is made between the mortality of persons of Russian and Polish parentage; for the mortality rate differs quite considerably, and the two nationalities should never be combined, no more than Hungarians and Bohemians, two other nationalities subject to different rates of mortality at different periods of life.

Table 12 gives general information regarding deaths from specified causes and groups of causes in registration States by birthplaces of mothers, but without distinction of age. This table is one of very limited usefulness, and the thirty-five pages necessary could readily have been reduced to less than ten if only the more important causes of death had been given in detail.

Table 13 gives the deaths in the United States, in the registration area and its subdivisions and in each grand group, from certain diseases at certain ages and from certain specified diseases and classes of diseases by months, with distinction of sex. This table takes up 174 pages; and, if anywhere in the census volumes there is extravagant waste of space for needless purposes, it is in this table, which, at its very best, can only have a very limited degree of public utility. It would have been fully sufficient to have given this information for the United States as a whole, and at most for the registration area, instead of giving all the information in elaborate detail for every possible subdivision by groups and grand groups of the entire United States. This table illustrates forcibly, perhaps more than any other evidence quoted, the non-critical nature of the supervising authority in charge of the division of vital statistics.

Not only is the table faulty in itself in that the age grouping, for instance, is unsatisfactory; but it gives other evidence of an absence of critical and careful supervision. Generally, three age groupings are given, to which is added a line showing the mortality at unknown ages. Of these there are about twelve to a table, all pertaining to an absolutely non-essential aspect of the general problem. It is not going too far to say that one-fourth of the space of almost three hundred pages is wasted for an entirely needless purpose. However necessary a statement of unknown ages may be in the original tables as compiled in the Census Office to act as a check on the accuracy of the original tabulation, it does not appear necessary that this information should be given in the published fundamental tables and made to occupy about one-fourth of the entire space. The age grouping generally adopted is under five, five to fifty-nine, and sixty and over. Since for all general census purposes the age grouping at adult periods ends with sixty-five, it would have been more desirable to have done so here; while a fourth age group, fifteen to twenty-four, could have been added to take the place of the line now occupied by data for unknown ages. In some instances different age groupings are adopted without, apparently, much discrimination. As further evidence of the needless waste of space in this elaborate table, it may be pointed out that the mortality from accidents and injuries is given by months and sex in all the different grand groups or regional divisions of the country, for all minor subdivisions, including suicide, with distinction of method, making it possible, of course, for the curious to learn how many deaths from suicide by drowning occurred in grand group 3 during each month of the year and at different periods of life. Since there was only one death from this cause, and this death occurred in June, being that of a male, probably the curiosity is satisfied. But, when such a detailed analysis, serving no possible practical purpose, is carried through almost two hundred pages of the census volume, it is a waste of space and opportunity with which those who require the volumes for practical purposes can have little patience.

Mortality Data by Single Years of Life.

Instead of publishing a mass of unnecessary details likely to prove of possible value only in extremely rare cases, there should have been published a fundamental table of American mortality, showing for each single age of life the number of deaths enumerated and registered, first for the entire United States, second for the registration area, third for the non-registration area. This table should have been supplemented by tables of deaths by single ages, with distinction of sex, color, and nativity; but such a table need only have been given for the registration area, for which the corresponding population data should have been published. Population volume, Part II, contains such tables for all the States; but by an unfortunate oversight the data regarding deaths by single ages for registration States were not given to the public. Such tables, aside from the fact that they make possible combinations or groupings other than those adopted in the analysis, serve the further and still more important purpose of affording an indication of the accuracy of age statements as affected by race, nationality, and registration mortality. It is to be hoped that the forthcoming annual volume will contain such a table for the registration area as a whole and with due consideration of race, showing separately the mortality at individual ages and groups of ages for the white, negro, Chinese, Japanese, and Indian populations. Such a table would certainly serve a far more useful purpose and occupy less than one-twentieth of the space given to wholly unnecessary details of the mortality by months from different causes and at different ages in the twenty different regional divisions of the United States.

Conclusions.

Vital statistics have a value which cannot be measured in monetary terms. They exhibit from year to year, from decade to decade, the health progress of the nation; and in numerous other ways they serve as an index factor of social and economic progress. Vital statistics, more than any other statistical data, enable the careful student of social and economic tendencies to establish evidences of progress and decay; and, in recognition of their great value, national, State, and municipal governments have expended large sums of money in the collection and registration of births, marriages, and deaths. If in a large measure it is true today, as pointed out by De Bow in 1855 in his volume on the vital statistics of the Seventh Census, that "it is more easy to satisfy mankind of the value of any other branch of statistics than that which relates to the numbers which die in any period, their ages, sex, occupation, condition, and nativity, and the causes which produce such deaths," it is almost entirely because there has been practically no public education in the elementary principles and in the scientific use of such data. Although physicians make frequent use of vital statistics, and although most contributions to medical and surgical literature abound with statistical tables, the evidence is overwhelming that few medical practitioners and sanitarians have a clear recognition of the statistical method and the relative value of the different statistical elements, which may properly be laid down as a most serious defect in the teachings of modern medicine.

Numerous illustrations can readily be furnished to prove this general ignorance of even the most simple elements of vital statistics. Thus, for example, Elihu Root, in his report as Secretary of War for the year 1899, commits himself to the view that "the significance of the annual *rate of death* from disease in the Philippines (17.2 per 1,000) may be better appreciated by comparison with the rates *in* some of our well-known American cities." (The italics are mine.) Mr. Root gives a table showing the annual death rates of Washington, Boston, San Francisco, etc., together with the mortality rate from disease of soldiers in the Philippines. Even a moment's reflection would have made it clear to Mr. Root that a comparison of the death rate of soldiers, mostly of ages eighteen to thirty, could not properly be made with the mortality of the general population at all ages. Even a comparison with the general death rate of cities, at ages fifteen to forty-five, which, according to the then available census of 1890, was 10.9 per thousand, would not have been accurate in that soldiers represent a carefully selected class of physical risks in contrast to the general population, which includes the sick and otherwise physically impaired. The only accurate method of comparison which could have been suggested to the Secretary of War by the Surgeon-General of the army would have been the average mortality rate from disease of soldiers in the United States army previous to the war with Spain. But by this method the argument advanced by Mr. Root could not have been proven for, according to the annual reports of the Surgeon-General, the mortality of soldiers from disease during the five years, 1891–1895, was at the rate of 4.3 per thousand, while during 1896 the rate was 3.8, and during 1897 it was 3.1. In other words, the mortality of soldiers in the Philippines from disease was four times as great as the mortality from disease of United States soldiers under conditions of peace.

A similar misleading comparison, made for the same purpose of proving the loss of life in our military operations to have been of comparatively small importance, is furnished by an extract from the *Medical Record*, printed in the New York *Sun*. The statement is to the effect that "the death rate of the troops in France amounts to 6.1, in Algiers to 12.3, and in the colonies to 42.95 *per cent.*" France has serious problems of fecundity and mortality and complex problems of colonization, but the nation is at least fortunate enough not to lose almost one-half of its army in military operations in the colonies during a single year. It is not necessary to point out that the rate quoted is not per cent., but per thousand. This, however, evidently escaped the writer of the article, who remarks that, "when we compare these statistics of an army at peace and those of the mortality rate among our own soldiers in the war with Spain, which was something like 2 *per cent.*, it is only fair to ask whether the great outcry against the excessive death rate in our army is wholly warranted." As a matter of fact, a death rate of 2 *per cent.* in our own army is equivalent to 20 per thousand, which is five times that of a normal army death rate of 4 per thousand.

That such abuses of the statistical method are not at all infrequent, it is hardly necessary to point out; but a few more illustrations may not be out of place in this statement of the evident need of a more scientific and common-sense method of dealing with the nation's vital statistics. Under date of Oct. 10, 1901, the New York *Sun* contains a despatch from Washington relative to a report of General Wood, then commanding the department of Cuba, to the effect that "the *percentage* of loss was 1.25 per thousand." This statement is equivalent to a request at the grocer's for a quart of molasses at 16 cents a yard. Yet the New York *Sun* prides itself on its accurate use of good English. There is evidently room for a great improvement in the accurate and proper use of rates and ratios determined by the statistical method.

In a still more recent issue of Aug. 26, 1902, in a leading editorial on self-destruction, itself full of fallacies, misleading data and erroneous conclusions, the *Sun* remarks that, "according to the most authoritative of recent statistics of suicide, the country in civilization *where the rate per thousand living is greatest* is Saxony, with 31.1 *per cent.*, while in the United States it is only 3.5 *per cent.*" As a matter of fact, the rates quoted are per hundred thousand, and the term "per cent." is as radically misleading as it is completely misunderstood by the writer of the editorial. Since the general average rate of mortality from all causes in the United States is not as high as 2 per cent., a suicide rate of 3.5 per cent. would be an unheard of intensity of self-destruction. These illustrations of the abuses of the statistical method, especially in the direction of mortality data, emphasize the need of public education, which can only come about through a more scientific treatment of the subject on the part of those who have charge of the tabulation and analysis of municipal, State, or national health reports. As long as it is possible to arrive at absolutely opposite conclusions on the basis of rates published by the authority of the national government, the general public cannot be seriously found fault with for similar errors.

While in England medical officers of health are usually graduates of distinguished universities, and graduates of a special course on public health matters, giving the right to the title "doctor of public health," in this country the registration of vital statistics and the supervision of local health matters is as likely to be intrusted to a civilian as to a physician, but in either case generally to one who has given but very little time and thought to the larger and more important problems of public health. This is made evident by an examination of the large number of public health reports published for American cities, which, while, generally speaking, may be satisfactory as regards public health matters from the point of view of sanitary administration, fall lamentably short in the direction of a careful study of the local mortality experience as affected by race, parent nativity, and occupation. Most of the official references made to the vital statistics are entirely perfunctory, and the disease classification adopted is usually crude, while, if ages at death are given at all, they are generally given by arbitrary divisional periods of life. Thus the comparison of the health conditions of one community with another is difficult and quite often impossible, while for any given community it is next to impossible to determine accurately the specific importance of different mortality elements or the specific mortality at different periods of life. Often numerous tables will be given, showing the mortality in great detail by months,— a factor of comparatively small, if any, importance, regarding most of the diseases; but with only very rare exceptions is any information whatever published regarding the mortality by occupation,— a most important factor, especially for large manufacturing communities. A thorough analysis is rarely attempted, accurate rates on the basis of population by divisional periods of life are seldom calculated, and conclusions of the most misleading nature are advanced, while the real value and importance of vital data is lost sight of. These, then, are the general reasons why vital statistics are not appreciated by the general public to the extent that would be desirable, and hence the importance that such contributions as are made by the Census Office to this branch of scientific inquiry should bear the stamp of greatest ability and absolute accuracy.

It is a matter of sincere regret to the writer that the census volumes on vital statistics should in 1900 have fallen so far short of what the general public, in view of the vast importance of the subject, had a right to expect. To those who are compelled to make use of published statistics on public health, the defects of the volumes, as pointed out in this review, must needs prove a most serious hindrance in connection with special mortality investigations. Human life has a value which cannot be measured in financial terms, but the courts have found no difficulty in fixing an approximate valuation on life prematurely ended as the result of violence or negligence. A needless death from typhoid fever at the age of twenty, resulting from an impure water supply, as the direct result of criminal municipal negligence, is not merely measured by the usual estimate of $5,000, but is far more accurately measured by the expected after lifetime, which for a man at twenty would be represented by about forty years. If, then, as the result of a more careful and scientific study of vital statistics, it is possible to set forth clearly that the great waste of life, of which we are all in a measure aware, can be diminished by measures tending to prevent accidents or the unnecessary prevalence of disease, the social and economic value of vital statistics will become quite readily apparent to the general public.* The census is a costly undertaking; and the American people, who pay liberally for investigations of this kind, have a right to insist that they shall not be imposed upon by a mass of misleading statistics and conclusions published under government authority as a contribution to science.

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*See "An Address [by the writer] on the Practical Use of Vital Statistics," published in the "Proceedings of the New Jersey Sanitary Association" for 1900, pp. 60–72; also, a paper on the "Need of Accurate and Uniform Social Statistics," published in the "Proceedings of the First New Jersey Conference of Charities and Correction," 1902, pp. 104–110.

AMERICAN

STATISTICAL ASSOCIATION.

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THE NEGROES OF ST. LOUIS.

BY LILIAN BRANDT.

1. THE SOCIAL ENVIRONMENT.

The population of St. Louis, in the variety of its composition, is typically American. At first an almost purely French settlement, the development of the steamboat interest and the importance of the city as a center of trade soon attracted men from all over the United States. The first important addition from Europe came when the Irish began to leave home in the thirties. After 1848 the Germans poured in, and continued to come until in 1890 they numbered 66,000; since 1890 the number has decreased to 55,781. In the last twenty years the city has received its quota of the increasing immigration from the south and east of Europe. There are a few Chinese, and in fact almost every known country of the world is represented here. The Negro was brought in by the slave-holding colonists of the early days, and has continued to come of his own free will since the civil war.

The population at present, therefore, consists of the following elements:

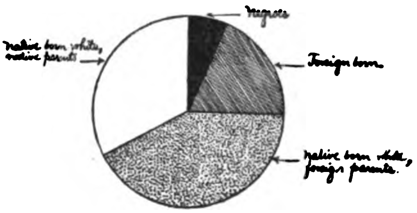
TABLE I.—(DIAGRAM I.)

POPULATION OF ST. LOUIS, 1900.

Class.	Number.	Per Cent.
White	539,385	93.77
Native born	428,419	74.48
Of native parents	189,249	32.90
Of foreign parents . . .	239,170	41.58
Foreign born	110,966	19.29
Negro	35,516	6.17
Other colored	337	.06
Total	575,238	100.00

DIAGRAM I.—(TABLE I.)

POPULATION BY NATIVITY, 1900.

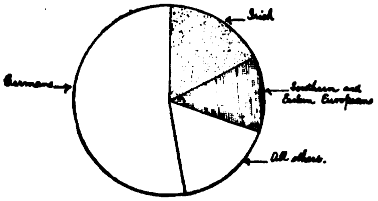


First, not in numbers, but in priority of occupation by their fathers, come the native born whites of native parentage, and these are less than a third of the total population. Second, the largest class of all, we have the children of immigrants, who form 41.58 per cent of the total population and over half of the native born whites. The foreign born constitute 19.29 per cent, a proportion less by 6 per cent than in 1890.

There has been a change also in the relative importance of the different nationalties, reflecting the change in the mass of immigration. In 1890, 57.45 per cent of the foreigners were German, and 21.13 per cent Irish. Both these percentages have decreased at the cost of an increase in the proportion furnished by southeastern Europe. In 1900 the Germans constituted but 52.79 per cent of the total number of the foreign born, and the Irish 17.44 per cent, while the quota furnished by the states of the south and east of Europe had increased to 14,235, or 12.78 per cent of the foreign born.

DIAGRAM II.

NATIONALITY OF FOREIGN POPULATION, 1900.



In such a setting we find 35,516 Negroes, a group not much smaller, absolutely, than the one in Philadelphia, and constituting a larger proportion of the population of the city. In fact, St. Louis ranks second only to Baltimore, among the ten largest cities of the United States, in the relative number of its Negro inhabitants.

The "problem" presented by this group, however, depends on considerations of which size, even relative size, is not first in importance. The seriousness of the problem of any race or nationality in the United States depends, to begin with, on the degree of difference between it and the prevailing national type; and in the next place, on the strength of the forces at work within and without the people to bring them in touch with what is best in American civilization. These forces are their racial or national characteristics and tendencies; their adaptability to new conditions, climatic, economic, social, and political; the influence of their own leaders; and the attitude of environing humanity towards their efforts, in coöperating with them, or in hindering them by indifference or distinct discouragement. There is, for example, no German problem, though the Germans form a large part of our population, because they are already in line with American ideals before they come over, and quickly become assimilated.

On the other hand, the Russians, the Hungarians, and the Poles require more assistance to be converted into desirable American citizens, and one of the most hopeful features of their situation is that, especially among the Jews, the work is being seriously undertaken by leaders of their own race. In any study of the Negroes all of these elements should be taken into consideration, and the vital point to investigate is how far their condition is due to native and ineradicable characteristics, whether physical, mental or moral, and how far it is the result of circumstances. If it seems to be rather the result of their history and present environment, and if at the same time there are signs of progress, and if the race leaders who have been evolved are working along what seem the best lines, and have the sympathy of an increasing portion of the white population, there is ground for the faith that the Negro problem, while sufficiently serious, is not unsolvable.

2. POPULATION STATISTICS.

The Negro has been a feature in the life of St. Louis almost since the founding of the city. It is improbable that the thirty hunters, farmers, and artisans who came here with Auguste Chouteau in 1764 to establish a trading station under the direction of Pierre Laclede were slave owners, but there is hardly a doubt that slaves were brought in by families coming from New Orleans and Illinois the next year.[1] The slave-holding character of the settlement as established by the early French traders attracted a number of wealthy planters from San Domingo when slavery was abolished there, and after the passing of the Northwest Ordinance many slave holders crossed over from Illinois. There is proof in existing records[2] that the sale of slaves began within two years after the founding of the city, and in the course of time St. Louis became the slave market for the surrounding country. The census of Governor Delassus[3] shows that in

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[1] Hyde and Conard, *Enc. of the History of St. Louis*, iv, 2075 ff.

[2] *Billon*, i, 62.

[3] Scharf, *History of St. Louis*, i, 309.

1799 St. Louis had a population of 925 souls and of these 601 were whites, 56 were free Negroes, and 268 were slaves. In 1810 the slaves were reckoned at from one-fourth to one-fifth of the population. The status of slavery was not affected by the Louisiana Purchase, and the controversy over the admission of Missouri into the Union resulted in establishing that institution in the state. It was abolished by the constitutional convention of 1865. The free Negroes, however, increased faster than the slaves; only 17 per cent of the colored population at the begining of the century, they formed a third of it in 1850, and over one-half at the breaking out of the Civil War. The growth of St. Louis since 1850 has been remarkable, and the Negroes have more than kept pace with the white population.

TABLE II.—(DIAGRAM III.)

POPULATION OF ST. LOUIS, BY RACE, 1850–1900.

Census Year.	Aggregate Population.	White.	Negro.		
			Slave.	Free.	Total.
1850	77,860	73,806	2,656	1,398	4,054
1860	160,773	157,476	1,542	1,755	3,297
1870	310,864	288,737	..	..	22,088
1880	350,518	328,191	..	..	22,056
1890	451,569	424,704	..	..	26,865
1900	575,238	539,385	..	..	35,516

In the half century the white population has increased 630 per cent, and the Negroes 776 per cent. The increase by the decades is shown in the next table.

The decade just before the war was one of great prosperity. St. Louis was the point of departure for the new West and the northern terminus of the growing river commerce. The white population was more than doubled. This immigration was composed partly of men from the Eastern United States, but chiefly of foreigners who began to pour in after the European revolutions of 1848. There was, however, an actual decrease in the colored population; this decrease

DIAGRAM III.

GROWTH OF THE POPULATION, 1850–1900.

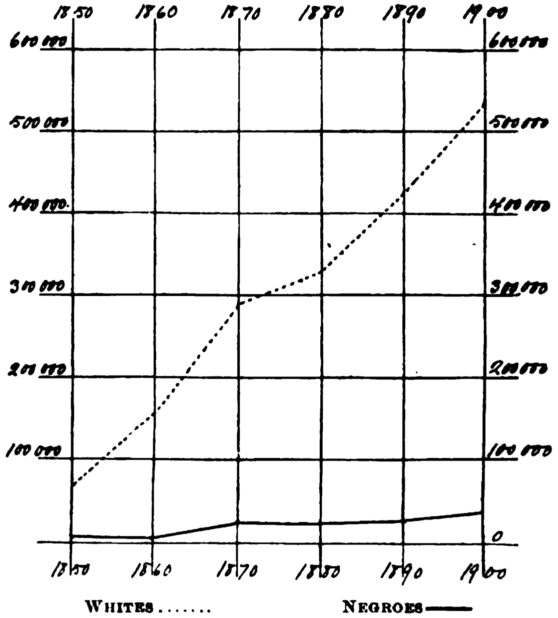


TABLE III.

INCREASE BY DECADES IN WHITE AND NEGRO POPULATION OF ST. LOUIS, 1850–1900.

Decade.	White.		Negro.	
	Number.	Per Cent.	Number.	Per Cent.
1850–1860	83,670	113.36	757*	18.68*
1860–1870	131,261	83.35	18,791	569.94
1870–1880	39,454	13.66	168	.76
1880–1890	96,513	29.41	4,609	20.71
1890–1900	114,681	27.00	8,651	32.20

* Decrease.

was among the slaves, and several explanations may be suggested, though none of them can be proved. There was a growing anti-slavery sentiment, caused by the character of the addition to the white population, which was, as has been said, largely German and Yankee. This new public opinion may have caused some slave holders to free their slaves and others to sell them South. Then, too, it was not difficult for slaves to escape across the river into a free state, and there were not wanting agents of the Underground Railway to help them on out of danger. Between 1860 and 1870 a phenomenal increase is indicated in both classes of the population. Part of this increase is probable, but the whole is impossible. Business interests were revived and extended immediately after the war, and St. Louis naturally received many of the freed slaves, from the states "down the river" and even from Maryland and Virginia, in their search for the perquisites of liberty believed to be found in cities. But an influx of nearly 19,000 Negroes in ten years seems incredible even after allowing for facilities of transportation and the inducements held out by the growing demand for labor on the levee and around the railroad station, and it is probable that the unreliable census of 1870 erred here on the side of exaggeration. This suspicion is confirmed by the very slight increase that appears in the next decade. The business depression following the panic of 1873 was not sufficient to account for such stagnation as these figures would indicate, and the fact that in 1876 the city limits were extended to include a territory two or three times as great in extent as the original city is an additional reason for witholding credence. The error was greater, as it always is, among the Negroes. Between 1880 and 1890 there was a normal increase of nearly 21 per cent in the Negro population and 29.4 per cent among the whites. The present census shows that in the last decade the rate of increase has been greater among the Negroes than among the whites by 5 per cent. The explanation advanced by some of the prominent Negro citizens, that the numerous lynchings which have been taking place in Texas and other states to the south of us are driving many desirable Negroes north, seems hardly sufficient. It is more probable that we have here an example of the tendency city-ward which is strong in all classes of population, but especially strong in the Negroes.

This supposition is borne out by an examination of the increase in the state at large, excluding St. Louis. It is found that the white population has increased only 14.34 per cent, as compared with 27 per cent in St. Louis, and that the Negroes have gained only 1.95 per cent in the ten years.

The importance of the Negro in the city at different dates is shown by the next table.

TABLE IV.—(DIAGRAM IV.)

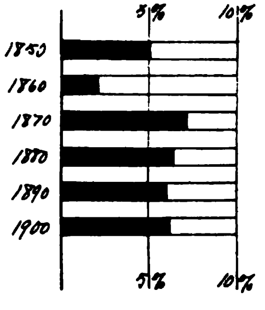
PERCENTAGE OF TOTAL POPULATION FORMED BY DIFFERENT ELEMENTS OF THE POPULATION, 1850–1900.

Census Years.	Aggregate Population.	White.	Negro.	Chinese, Japanese, Indian.
1850	100.00	94.79	5.21	*
1860	100.00	97.95	2.05	*
1870	100.00	92.88	7.10	.02
1880	100.00	93.63	6.35	.02
1890	100.00	94.05	5.95	†
1900	100.00	93.78	6.17	.05

* Included with Negroes. † Less than .01 per cent.

DIAGRAM IV.—(TABLE IV.)

PROPORTION OF NEGROES IN POPULATION, 1850–1900,



The Negro appears to have been of least consequence in 1860 and of most in 1870, when we must decide he was overrated. At present he forms over 6 per cent of the population of the city, a somewhat larger proportion than in 1890. The foreigner, on the other hand, has lost ground during the last decade, the statistics showing an actual decrease of 3.44 per cent in the foreign-born population. The natural inference is that in St. Louis the Negro is not destined to be superseded by the European.

3. PRESENT CONDITION.

In 1900, the Negro population of St. Louis numbered 35,516. Turning to a study of the group at the present time its constitution in point of sex and age are the first characteristics to invite attention.

The proportion of males to females is given in the following tables: —

TABLE V.

POPULATION OF ST. LOUIS, BY SEX, RACE, AND NATIVITY, 1900.

Class.	Total Population.		Males.		Females.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Negro . . .	35,516	100.00	17,496	49.26	18,020	50.74
White . . .	539,385	100.00	270,378	50.13	269,007	49.87
Native born	429,419	100.00	211,344	49.21	217,075	50.79
Foreign born	110,966	100.00	59,034	53.20	51,932	46.80
Total . . .	575,238	100.00	298,197	51.84	287,041	48.16

TABLE V.

POPULATION OF MISSOURI, BY SEX, RACE, AND NATIVITY, 1900.

Class.	Total Population.		Males.		Females.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Negro . . .	161,234	100.00	81,206	50.43	80,028	49.57
White . . .	2,944,843	100.00	1,513,977	51.41	1,430,866	48.59
Native born	2,890,286	100.00	1,475,593	51.05	1,414,693	48.95
Foreign born	216,379	100.00	120,117	55.51	96,262	44.49
Total . . .	3,106,665	100.00	1,595,710	51.36	1,510,955	48.74
			Missouri, excluding St. Louis.			
Negro . . .	125,718	100.00	63,710	50.67	62,008	49.33

In the matter of sex the comparison should be made with the native-born whites, not with the total white population, for the reason that in the foreign-born element there is the usual excess of males, and this affects the figures for the total white, and for the aggregate population. On this point the Negro population shows the same condition as the native-born white — a slight preponderance of females. This preponderance is, perhaps, not too great to be explained by the number of girls who come to the city looking for employment in domestic service. This explanation is upheld by the fact that in the population of Missouri there is an excess of males in all classes of the population, the excess being greatest, of course, among the foreign-born. Considering the Negro population of the state, excluding St. Louis, it is found that the excess of males just about counter-balances the excess of females in St. Louis, the proportion being 50.67 to 49.33.

In respect to age the following table (VI) and its accessory diagram (V) show that each of the classes of the population has a distinctive composition.

The largest proportion is found at a different age-period in each case. The native-born white of native parentage is probably nearest to the normal, with its broad base of children under 15 and gradually diminishing proportions at the higher age-periods. There the promise for the future is greater than the present strength. The native-born of foreign parentage and the foreign-born supplement each other, the fathers of the first group appearing in the second, and the children of the second in the first. The Negro group shows peculiarities: it has a smaller proportion of children than any other except the foreign-born, but it has also a small proportion of old persons. This seems to confirm the assumption that the Negro population is recruited largely by a class of young men and women who come to the city to find work.

The relative economic strength of the groups is better seen by grouping together the persons under 15 in a class

TABLE VI.—(DIAGRAM V.)

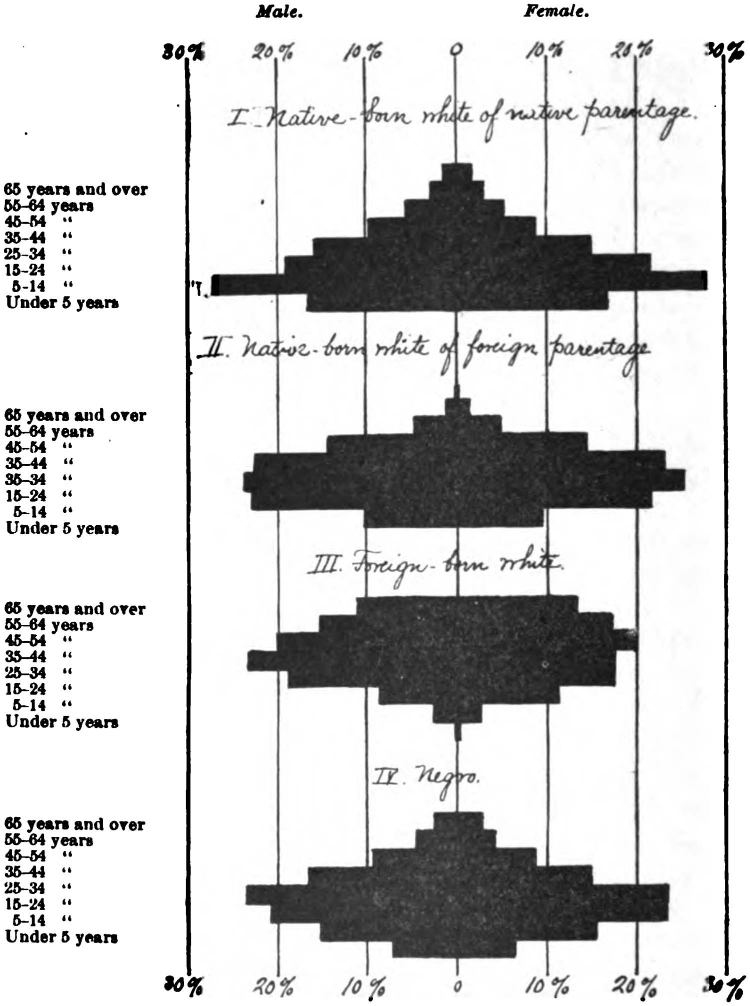
AGES BY PERIODS OF YEARS, CLASSIFIED BY SEX, GENERAL NATIVITY, AND COLOR, ST. LOUIS, 1900.

Age Period.	Native-born White, Native Parents.				Native-born White, Foreign Parents.				Foreign-born White.				Negro.			
	Male.		Female.		Male.		Female.		Male.		Female.		Male.		Female.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Under 5 years	15,716	16.5	15,544	16.6	11,758	10.1	11,429	9.3	92	0.1	81	0.2	1,227	7.0	1,176	6.5
5–14	26,121	27.3	26,163	27.9	26,557	22.9	26,519	21.5	1,403	2.4	1,411	2.7	2,666	15.2	2,755	15.3
15–24	18,282	19.1	20,146	21.5	27,437	23.7	30,984	25.1	5,114	8.6	5,804	11.2	3,655	20.9	4,179	23.2
25–34	15,229	15.9	13,828	14.8	26,198	22.6	28,373	23.0	11,166	18.9	9,090	17.5	4,096	23.4	4,206	23.3
35–44	9,170	9.6	8,149	8.7	16,452	14.2	17,618	14.3	13,671	23.2	9,109	17.5	2,870	16.4	2,675	14.9
45–54	5,398	5.7	4,867	5.2	5,534	4.8	6,086	4.9	11,843	20.1	10,365	20.0	1,623	9.3	1,570	8.7
55–64	2,741	2.9	2,829	3 0	1,453	1.3	1,681	1.4	9.033	15.3	8,917	17.2	752	4.3	758	4.2
65 and over	1,605	1.7	1,784	1.9	412	0.4	546	0.4	6,483	11.0	6,975	13.4	404	2.3	503	2.8
Unknown	1,230	1.3	447	0.4	51	[1] 0.0	82	0.1	229	0.4	180	0.3	203	1.2	198	1.1
All ages	95,492	100.0	93,757	100.0	115,852	100.0	123,318	100.0	59,034	100.0	51,932	100.0	17,496	100.0	18,020	100.0

[1] Less than .1 of 1 per cent.

TABLE VI.—(DIAGRAM V.)

AGE COMPOSITION OF THE POPULATION OF ST. LOUIS, 1900, CLASSIFIED ACCORDING TO SEX, GENERAL NATIVITY AND COLOR.



that may be called dependent and comparing them with the "productive" part of the group.

TABLE VII.

PROPORTION OF THE POPULATION IN THE DEPENDENT AND PRODUCTIVE AGE-PERIODS, BY SEX, COLOR, AND NATIVITY.

Ages.	White.						Negro.	
	Native Born.				Foreign Born.			
	Of Native Parentage.		Of Foreign Parentage.					
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Under 15 65 and over	45.5	46.4	33.4	31.2	13.5	16.3	24.5	24.6
15 to 64 . .	53.2	53.2	66.6	68.7	86.1	83.4	74.3	74.3
Unknown . .	1.3	0.4	0.0	0.1	0.4	0.3	1.2	1.1
Total . . .	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

It appears from this comparison that the Negro stands second only to the foreign born white in potential economic strength, and that the men and the women at the productive ages form exactly the same proportion (74.3 per cent) of the total population. The proportion of the Negro population which is dependent by reason of age is only 54 per cent as great as the corresponding proportion of the native born white population.

Table VIII shows the voting strength of the Negro as compared with that of the native born and the foreign born white population.

TABLE VIII.

PERCENTAGES OF THE AGGREGATE POPULATION AND OF THE MALE POPULATION 21 YEARS OF AGE AND OVER FORMED BY EACH ELEMENT OF THE POPULATION, 1900.

	Aggregate.	Whites.		Negroes.	Other Colored.
		Native Born.	Foreign Born.		
Total population	100.00	74.48	19.29	6.17	0.06
Males of voting age	100.00	60.85	32.14	6.82	0.19

The Negroes furnish 6.82 per cent of the total male population of voting age, but only 6.17 per cent of the general population, while the native born white voters are only 60.85 per cent of all voters, though the native white population is 74.48 per cent of the total population. The voting strength of the foreign white, which appears out of all proportion to their strength in the population, is reduced by the necessity for naturalization.

Finally, a comparison of the groups is made in regard to women of child-bearing age.

TABLE IX.

WOMEN BETWEEN THE AGES OF 15 AND 44.

	White.			Negro.
	Native Born, of Native Parentage.	Native Born, of Foreign Parentage.	Foreign Born.	
Number	42,123	76,975	24,003	11,060
Per cent of total population	22.26	32.18	21.63	31.14

From this table it is seen that the women between the ages of 15 and 44 form a much larger proportion of the Negro population than of either the native white of native parentage or the foreign white.

The Negro population of St. Louis, then, has an extraordinarily large proportion of men and women at the productive ages, and of women at the child-bearing age, and an undue quota of men of voting age, none of which characteristics is an unmixed advantage.

Depending on the composition of the population in sex and age is a third classification, the classification according to conjugal condition. The fact that the elements of the population differ in their sex and age constitution must not be lost sight of in considering their conjugal condition. For a general comparison it suffices to throw out of the calculation the population under 15 years of age. Table X shows the proportion of the single, the married, and the widowed and divorced, among the men and among the women of the native white population of native parent age, the native white of foreign parentage, the foreign white, and the Negroes.

TABLE X.

CONJUGAL CONDITION OF POPULATION OVER 15 YEARS OF AGE BY GENERAL NATIVITY, COLOR, AND SEX, 1900.

	Single.		Married.		Widowed and Divorced.		Unknown.
Males.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Per cent.
Native white of native parentage	26,235	50.04	24,104	45.97	2,001	3.82	0.17
Native white of foreign parentage	42,396	54.71	33,267	42.93	1,780	2.30	0.06
Foreign white . . .	13,887	24.23	38,678	67.49	4,699	8.20	0.08
Negroes	5,925	44.22	6,530	48.73	914	6.82	0.23
Females.							
Native white of native parentage	20,503	39.73	24,891	48.24	6,144	11.91	0.12
Native white of foreign parentage	37,555	44.03	41,494	48.65	6,137	7.20	0.12
Foreign white . . .	7,652	15.22	29,298	58.29	13,213	26.29	0.20
Negroes	4,015	28.90	6,830	49.17	3,029	21.81	0.12

It is noticeable that the proportion of single is in each case less among the women that it is among the men, and that most of this difference is compensated for by a larger proportion of widowed. This larger proportion of widows than of widowers indicated the higher mortality among men and their greater disposition to re-marry. The popular idea of the Negro's aversion to the single state receives confirmation here, though not so strikingly as might be expected.

The number of young people who drift to the city for work is one reason why the proportion of single is not still smaller than it is, and the indifference of a part of the Negroes to the formality of a legal tie is another. The proportion of widowed bears evidence to the high death rate of

TABLE XI.

CONJUGAL CONDITION OF THE NATIVE-WHITE POPULATION OF NATIVE PARENTAGE AND OF THE NEGROES OVER 15 YEARS OF AGE CLASSIFIED BY AGE AND SEX; PER CENT OF TOTAL.

Age.	Males.					Females.				
	Total.	Single.	Married.	Widowed and Divorced.	Unknown.	Total.	Single.	Married.	Widowed and Divorced.	Unknown.
Native-born white of native parents	100.00	50.04	45.97	3.82	0.17	100.00	39.73	48.24	11.91	0.12
15–19 years . .	100.00	99.42	0.49	0.01	0.08	100.00	92.41	7.24	0.28	0.07
20–24 "	100.00	81.35	18 20	0.28	0.17	100.00	55.90	41.88	2.07	0.15
25–29 " . . .	100.00	50.54	47.90	1.20	0.36	100.00	31.87	62.88	5.06	0.19
30–34 " . . .	100.00	32.11	65.55	2.04	0.30	100.00	19.15	72.40	8.24	0 21
35–44 " . . .	100.00	22.34	73.35	4.22	0.09	100.00	12.72	72.29	14.85	0.14
45–54 " . . .	100.00	14.38	76.55	8.87	0 20	100.00	8.80	64.37	26.71	0.12
55–64 " . . .	100.00	10.32	75.81	13.83	0.04	100.00	7.07	48.74	44.15	0.04
65 and over . .	100.00	7.78	61.50	30.53	0.19	100.00	5.77	22.93	71.19	0.11
Negroes . . .	100.00	44.22	48.73	6.82	0.23	100.00	28.90	49.17	21.81	0.12
15–19 years . .	100.00	98.48	1.40	0.06	0.06	100.00	84.57	14.54	0.84	0.05
20–24 " . . .	100.00	76.22	22.84	0.70	0.24	100.00	48.24	46.22	5.33	0.21
25–29 " . . .	100.00	48.76	48.66	2.40	0.18	100.00	27.08	61.61	11.31	0.00
30–34 " . . .	100.00	34.53	60.33	4.98	0.16	100.00	14.84	67.51	17.54	0.11
35–44 " . . .	100.00	23.83	67.63	8.12	0.42	100.00	10.32	61.80	27.66	0.22
45–54 " . . .	100.00	16.88	69.19	13.68	0.25	100.00	5.03	48.92	45.99	0.06
55–64 " . . .	100.00	10.64	67.15	22.21	0.00	100.00	4.88	35.62	59.37	0.13
65 and over . .	100.00	10.39	57.42	31.69	0.50	100.00	5.76	16.30	77.73	0.21

the Negro. The number of widows is increased by women whose husbands have deserted them when the family burdens grew too heavy and by women with illegitimate children. Both of these classes are larger among the Negroes than in any other part of the population, and the assumption of the title of widow is a method frequently adopted for attaining social standing.

A more detailed comparison of the Negroes with the native white population of native parentage is given in Table XI where both men and women are classified by age.

Marriage, with its attendant phenomenon, widowhood, appear earlier among the women in both cases, and earlier among both sexes of the Negroes than among the whites. The Negro women show a stronger tendency to marry at all ages than the white women of native parentage, and a more than correspondingly greater proportion of widows. This large proportion of widows is of great significance as indicating the economic struggle which is the usual accompaniment of this social state, for whether or not the woman has a legal claim to the designation she is almost sure to have all the attendant disabilities. The Negro men appear to marry faster than the white men up to the age of 30, but after that the single constitute a more important element among them than they do among the white men. It may well be that the husbands of some of the "widows" are included here and swell the ranks of the "single" to more than their just proportion.

4. Distribution of Negroes.

The distribution of any element of the population over the city is significant both as indicating the character of the element and as accounting in some measure for its character. A word in regard to the topography of St. Louis is necessary. This city has a situation which could hardly be paralleled in the possibilities it offers of expansion. It lies like an open fan for eighteen miles along a bend in the river, the two reaches of the river acting as the outside sticks of the fan. The business part is just at the curve of the river and is constantly pushing north and south and west, encroaching on the residence streets. The residence portion, in turn, expands in the same way to the north and south and west. The growth has been, and will continue to be, by concentric zones to the west. The most desirable residence sections at any date, are, generally speaking, to be found towards the western edge of the city. It is noticeable that there was a tendency to separation of the white from the black as early as there was a free Negro population of any consideration. In 1860 the city was divided into ten wards; 44 per cent of the total slave population was contained in two wards, and these two, the fifth and sixth, were the aristocratic residence section of the city at that time; 49 per cent of the free Negroes are found in two wards, but not the same two. The fourth and seventh lay to the north and south of the fifth and sixth and extended west from the river. The parts next the river were poor districts then, as they are now. It was natural that the free Negroes, whose chief occupations at that period were connected with the boats and the levee, should congregate there and form the nucleus of two of the worst slums in the city. In 1870 three of the twelve wards of the city contained 55 per cent of the Negroes; but the white population of the same three wards was only 30 per cent of the total white population. These three wards, the fourth, fifth, and eighth, correspond to the fourth and seventh in 1860, with an extension to the south. The character of the districts was unchanged. For 1880 no figures by wards and race are available. In 1890 there were twenty-eight wards. The segregation of the Negroes had increased: 39 per cent of the Negro population was found in five wards containing only 15 per cent of the white population. In 1900 the concentration is still more marked, for 49 per cent of the Negroes live in six wards, where is found only 14 per cent of the white population. As the ward lines are changed every five years (in 1887, 1892, 1897, etc.) it is impossible to make a strictly accurate comparison of conditions in 1890 and 1900. A fairly reliable impression, however, may be obtained from shaded maps showing the relative importance of the Negroes in each ward. The tables on which the maps are based are here given. Since the number of wards was the same in 1900 as in 1890 the two tables have been combined in the interest of compactness, but it must be remembered that any given ward — 15, for example,— in 1900 does not represent the same area, nor even necessarily the same general locality, as the ward with the corresponding number in 1890. The fact that in ward 15, in 1890, 29.75 per cent of the population was colored, while in 1900 the Negroes formed only 21.98 per cent of the total population of ward 15 does not mean a lessening in the concentration in a definite area; it means, indeed, just nothing.

TABLE XII.

POPULATION OF ST. LOUIS BY WARDS, 1890 AND 1900.

Ward.	1890.			1900.		
	Total Population.	Negroes.		Total Population.	Negroes.	
		Number.	Per cent.		Number.	Per cent.
1	11,293	1,382	12.24	25,139	1,569	6.24
2	10,893	1,284	11.79	21,030	458	2.18
3	13,490	965	7.15	22,958	1,343	5.85
4	12,790	397	3.10	12,212	2,396	19.63
5	16,730	582	3.48	12,349	2,442	19.78
6	18,366	538	1.84	19,140	1,409	7.36
7	20,501	72	.35	22,626	533	2.36
8	13,322	1,391	10.44	21,012	3	.01
9	20,712	98	.47	21,026	97	.46
10	17,755	1,077	6.06	25,978	365	1.40
11	18,367	438	2.38	22,105	1,083	4.89
12	15,234	38	.25	25,220	153	.61
13	11,837	873	7.37	19,811	1,064	5.37
14	15,369	427	2.78	15,098	3,427	22.70
15	11,913	3,544	29.75	17,544	3,857	21.98
16	13,804	108	.78	21,408	959	4.48
17	15,201	2,093	13.77	18,953	154	.81
18	17,462	486	2.78	18,799	3	.01
19	16,363	1,592	9.72	20,245	284	1.40
20	14,783	1,228	8.31	18,803	1,619	8.61
21	16,713	916	5.48	18,173	870	4.78
22	15,678	842	5.38	16,974	2,709	15.96
23	19,815	111	.56	17,985	2,645	14.71
24	16,777	855	5.09	27,317	641	2.35
25	18,256	1,315	7.20	21,311	1,999	9.38
26	18,093	1,817	10.04	23,425	2,026	8.64
27	17,871	1,263	7.07	20,599	543	2.64
28	22,392	1,333	5.95	27,998	865	3.09
Total .	451,770	26,865	5.95	575,238	35,516	6.17

The apparent decrease in the western part of the city is deceptive; the bulk of the Negro population of wards 26, 27, and 28 in 1890 lay in the eastern part of these wards, and appears in 1900 in the new wards formed partly out of those districts. Allowing for this, it is evident from the maps both that the concentration is increasing, and that the concentrated area is extending westward. The Negroes are following, at a distance, the movement of the white population.

At present, then, almost half of the Negroes live in six wards, in which they form from 14.71 to 22.70 per cent of the population of the ward. These wards, ranked according to the proportion of Negroes, are the fourteenth, fifteenth, fifth, fourth, twenty-second, and twenty-third. Wards 4, 5, 14, and 15 form an irregular rectangle extending west from the river. Ward 4 is the mercantile section of the town and 5 contains many factories. The partial tenement-house investigation made by the Board of Health in 1897 showed that ward 4 contained the highest number of tenement houses.[1] Ward 14 consists of the Union Station and streets that may be considered its inevitable environment, and is no better than such sections are apt to be in an American city. Ward 15 consists partly of fine old residences that have degenerated into second and third-rate boarding houses and partly of poor tenements and shanties that have never been anything else. As it is impossible to obtain figures for the area of the wards their density can only be estimated. It is evident from a glance at the map that wards 4 and 5 are among the smallest. It must be remembered also that in both of them the available residence space is much less than appears on the map by reason of the large proportion of ground occupied for business purposes. And so, although the population of these two wards is somewhat smaller than that of any other, yet it is probable that their actual residence portions have a greater density than is to be found anywhere else in the city. In wards 4 and 5 the dwellings

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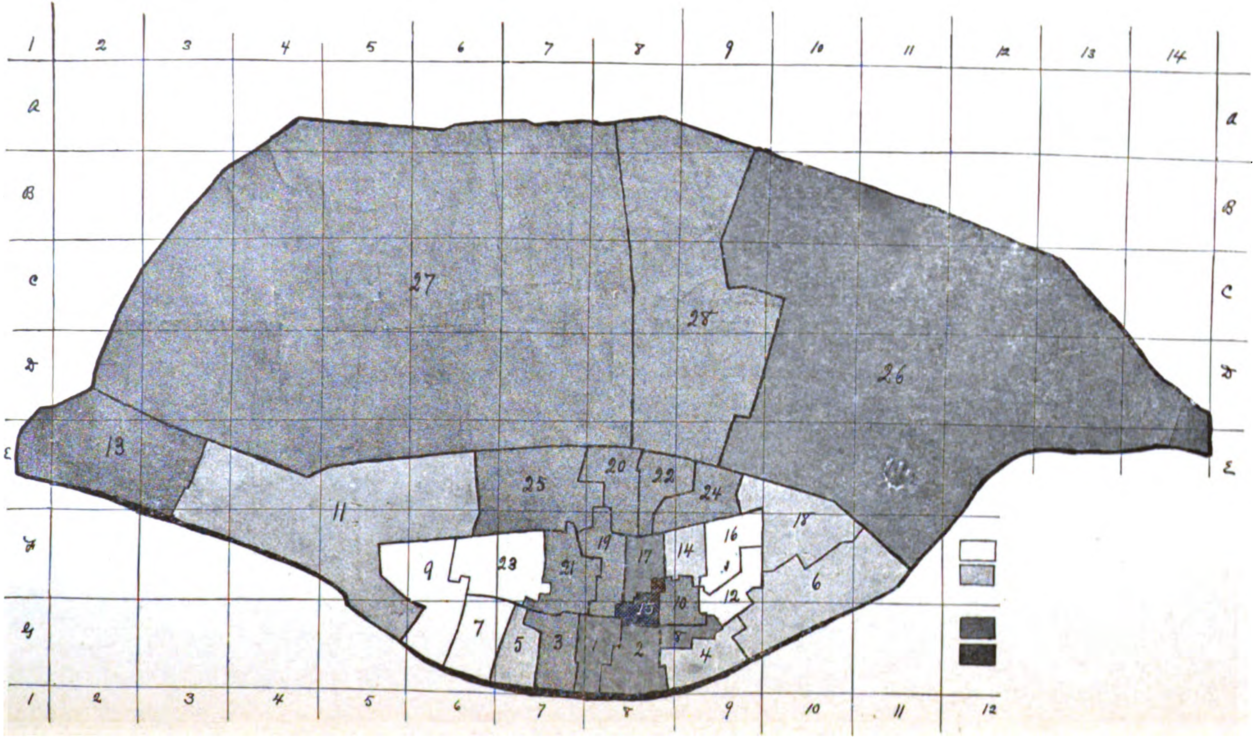
[1] *Mayor's Message*, 1897, p. 120.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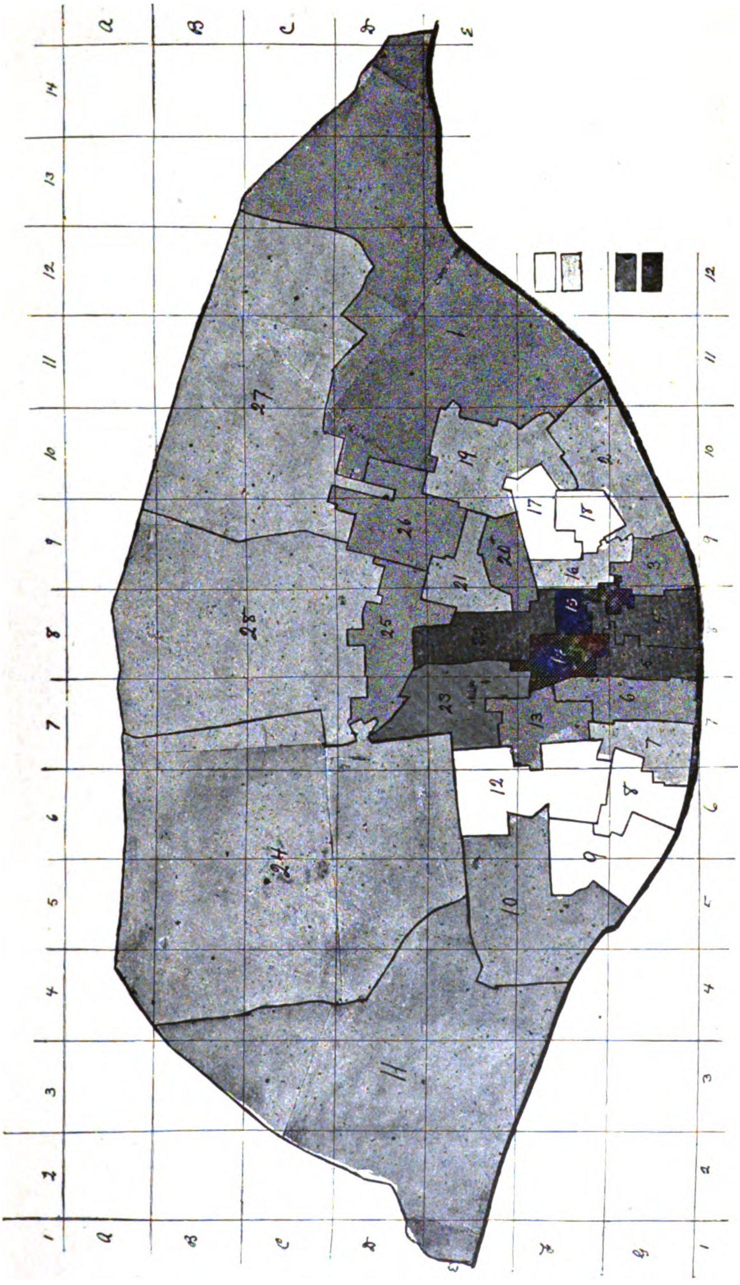

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are crowded in behind factories and warehouses. The white population is chiefly Italians and other south-eastern Europeans, and these districts are considered to be about the worst slums in the city. The fourteenth and fifteenth wards are not quite so bad, but the streets where the Negroes live consist of houses that are dirty and out of repair, if not actually in a tumble-down condition. Wards 22 and 23 lie west of 14 and 15 and are of a distinctly better character. They contain the better class of Negroes, the professional and successful business men. The houses in the Negro streets are comfortable and in fairly good condition, on the average, and many are owned by the occupant. This is a comparatively old section of the town, and the houses now occupied by Negroes were built by well-to-do white residents who have since moved farther west. Ward 23 includes also a poor quarter lying along the railroad tracks in low land which was once marshes. There is a considerable number of Negroes also in wards 25 and 26, which are very desirable residence sections. This number represents chiefly domestic servants, but there are also two or three settlements of well-to-do Negroes on certain streets. The 865 in ward 28 are nearly all servants.

It is interesting to notice the converse of this fact of concentration. There are two wards containing only three Negroes each, and the Negroes in wards 8, 9, 12, 17, 18, and 19 together amount to less than 2 per cent of the total Negro population, while these wards contain 23 per cent of the whites. These six wards all have a distinctly German or Irish character.

In general, it is true that the Negroes are almost absent from the sections of the city where there is a large foreign population, and that, with notable exceptions, they are concentrated in the worst houses of the worst sections, wherever the natural lie of the land or the unpleasant accessories of civilization, such as railroads and factories, make residence undesirable. The overcrowding of rooms is a fact for which no statistics are available, but it is none the less a fact.

The hospitality of the Negroes and their willingness to take in any friend who finds himself without a home receive no check from the law. There are no state regulations concerning tenement houses, and the city ordinances go only so far as to class them under "nuisances" when they do not have "adequate" sewerage, drainage, ventilation, chimneys, halls, staircases, and "all reasonable precautions and provisions in every other particular, and adequate space for all occupants, so that the occupancy of said building or any apartment shall not be dangerous to life or health."[1] Under such provisions it is not surprising that the agent of the Provident Association should have found recently fourteen Negroes living in one room.

The Negroes are kept in these undesirable localities not wholly by their own faults and incompetence, but partly by the obstacles which they encounter when they try to go into a better neighborhood. No landlord wishes to have Negro tenants come into his houses because it means a depreciation of the property sooner or later. When a Negro family moves into a street it generally happens that the white residents give place either to more Negroes or to a much inferior class of whites. To keep up the character of the street, therefore, or to reimburse himself in advance for the depreciation which he foresees, the landlord resorts to discriminating rents. A Negro going into a house previously occupied by a white family is obliged to pay from 20 per cent to 50 per cent more than his predecessor. A certain house in ward 25, for instance, rented for $25 per month to white tenants, but a Negro was asked $40. This is true even in the poorer districts. There are some comfortless three-room flats in ward 14 which were occupied until recently by white people paying $8.00 per month; the Negroes living there now are charged $13. Sometimes when a Negro family moves into a "white" street the residents themselves undertake to deal with the question. An instance of this is described in the *Globe Democrat* for Sept. 5, 1901. It seems that on

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[1] *Revised Ordinances of* 1891, Art. XI, §§454–55.

Sept. 4th a white woman moved away from a certain street where she had been very unpopular with her neighbors; when she was leaving, her neighbors gathered together and expressed their pleasure by a noisy serenade on tin pans and drums, with such effect that two were arrested for disturbing the peace. When a Negro appeared to take possession of the house, however, the joy gave place to indignation, and an ominous silence greeted the new-comer in place of the cheers that he might have expected. The next morning two signs were displayed facing the house: "Notice — No colored people allowed to live in this block." A policeman was detailed to stand guard in the block for several days, to avert any disturbance that might arise. The residents declared, with dark implications, that they meant to try moral suasion "first." The Negroes paid no attention to the attitude of their neighbors; the accredited rumor was that the unpopular white woman who had just left had sold the house to the Negro, with the deep design of troubling her enemies even more than she could by remaining there herself. This dramatic incident is significant of much besides the attitude of white toward black, but with the rest we are not now concerned.

It is impossible not to sympathize with landlords and residents in this policy of exclusion when one considers the undesirability of the average Negro as tenant or neighbor, but it is manifestly unfair that all Negroes should be judged by the average and treated accordingly. A knowledge of the discouragements encountered emphasizes the importance of the fact that there is an element of the Negro population which is getting out of the slums into localities that are not only decent but in many cases comfortable and pleasant.

5. VITAL STATISTICS.

The interest and importance of vital statistics are equalled only by the difficulty of getting any that are reliable. A record of the deaths in St. Louis since 1867 is on file in the office of the Board of Health, and since 1877 a registration of births has been required. The figures for deaths in recent years are probably accurate, but the figures for births are even now so incomplete as to be of no value. In the absence of anything more satisfactory the tables are given for what they are worth:—

TABLE XIII.

Births and Deaths in St. Louis, 1867-1900.

Year.	Number of Deaths.				Number of Births.	
	All Ages.		Under 5 Years.			
	White.	Colored.	White.	Colored.	White.	Colored.
1867	6,075	463	....	....	....	....
1868	4,854	339	....	....	....	....
1869	5,526	358	....	....	....	...
1870	6,329	241	....	....	....	....
1871	....	....	....	....	....	....
1872	7,684	363	....	....	....	....
1873	8,142	409	....	....	....	....
1874	....	..	....	....	....	...
1875	7,035	497	....	....	....	....
1876	5,802	217	....	....	....	....
1877	....	....	....	...	2,282	89
1878	5,451	551	....	....	4,483	198
1879	5,576	591	....	....	4,385	256
1880	5,584	781	2,587	350	7,019	506
1881	7,591	819	3,252	289	7,704	362
1882	7,030	815	3,139	315	8,061	340
1883	7,342	835	3,098	322	8,440	395
1884	....	....	....	....	....	....
1885	6,671	819	2,762	328	9,513	393
1886	7,437	831	3,135	299	9,900	396
1887	8,338	817	3,472	323	10,186	457
1888	8,002	1,013	3,274	385	10,885	450
1889	7,022	982	2,809	340	11,390	516
1890	7,506	903	2,801	314	11,077	487
1891	8,531	999	3,129	364	11,158	451
1892	9,116	1,109	3,228	379	11,840	466
1893	9,198	1,105	3,183	365	11,404	616
1894	8,710	1,024	2,812	380	12,233	723
1895	8,263	1,162	2,008	365	11,168	680
1896	9,897	1,121	2,962	364	11,281	746
1897	9,554	1,165	2,576	325	11,600	876
1898	8,908	993	2,313	295	10,815	851
1899	8,828	1,194	2,678	327	10,422	507
1900	8,638	1,109	2,409	239	10,763	526

TABLE XIV.

DEATH RATES AND BIRTH RATES IN ST. LOUIS AT THE CENSUS YEARS 1870-1900.

Year.	Death Rate.				Birth Rate.	
	All Ages.		Under 5 Years.			
	White.	Colored.	White.	Colored.	White.	Colored.
1870	21.92	10.91	....	....	....	....
1880	17.84	35.09	....	....	22.39	23.78
1890	17.67	33.36	57.14	132.99	26.08	17.99
1900	16.01	31.22	44.14	99.45	19.95	14.81

A more astonishing figure than the death rate among the colored population in 1870 could hardly be imagined, for all investigation has gone to show that there is always an abnormally high death rate among Negroes in cities. This abnormally small rate is due largely to lying statistics; the record of deaths was incomplete, and the size of the Negro population was exaggerated. (See above.) There was one circumstance, however, which would have operated to keep the rate low. During the preceding decade, it may be remembered, the Negro population increased enormously. An increase due to migration, even inter-state migration, means a large proportion of persons between the ages of 15 and 40 and a small proportion of children and old persons. It is well known that mortality is greatest in the extreme age-periods. Any element of the population, therefore, with an unusual proportion of persons in the middle age-periods will have a small death rate. On account of the remarkable events of the preceding decade the Negro population of St. Louis in 1870 was so constituted, and the real death rate was probably low, though it could not have been so low as 10.91 per 1000. The rates for 1880, 1890, and 1900 are about what would be expected; the rate for the colored is about double that for the whites. The difference is somewhat greater than appears in the total urban population of the registration area of the United States in 1900, where the Negroes show a death rate of 31.1 and the white 17.9;

but it is not so great as in some of the southern cities. In Charleston, for example, the death rate among the whites in 1900 was 25.6, and among the Negroes, 46.7. The rate for both Negroes and whites has decreased since 1880, but the decrease is more marked for the Negroes, and this may fairly be taken as an indication of improvement in their economic condition.

The combinations in which either the vital statistics or the census statistics for population are presented render it impossible to make any more significant comparisons than this of the number of deaths with the total population, except in 1890 and 1900, where the death rate for children under five years of age may be given. There is a greater excess of Negro mortality here than there is in the total population, the rate for the colored being 2.3 times that for the whites. This rate, however, is not larger than is found in other cities.[1] It is significant as indicating an enormous waste of life, and is to be explained by the lack of care and the ignorance in which the child is born and allowed to grow up, if he has sufficient vitality.

In this respect there has been a marked improvement in the last decade in both races, the decrease being slightly greater for the white than for the colored population. The amount of improvement is probably not so great as is indicated by these figures, for the year 1900 was not an average year; the summer was comparatively comfortable and did not work the usual havoc among infants.

The birth rates are so absurd that it is hardly worth while to mention them. They show an alarming decline in both races since 1880, and at the last two census years a marked difference between the two races in favor of the whites. There are in St. Louis no conditions to make it probable that the white population has a birth rate lower even than that of France. It is still less probable that the Negroes of the city should have that mark of an old civilization, and have it in a greater degree than the whites. The registration of births is confessedly incomplete, and omissions are apt to be far more numerous among the Negroes than among the whites, for reasons sufficiently obvious. Under the circumstances it would only be misleading to attempt any study of the relation of births to deaths. There is no reason to think that the natural increase among the Negroes is much less than among the whites, although their environment would tend to make it somewhat less, the high birth rate due to their general improvidence and low degree of civilization being offset by a high death rate due to economic conditions.

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[1] See Billings, *Vital Statistics of Washington and Baltimore*, pp. 6, 8; Hoffman, *Race Traits and Tendencies*, p. 44.

It has been firmly established by statistical investigations[1] that the mortality among Negroes is chargeable largely to consumption, pneumonia, and children's diseases; the death rate under five shows the ravages of the last mentioned. Of the 1109 deaths occurring among the colored population in 1900, 178, or 16 per cent were caused by phthisis and tuberculosis, and 131, or 11.8 per cent by pneumonia. The death rate from phthisis and other tubercular diseases was for the white population 1585 per 100,000, and for the colored 5012, or 3.2 times as great. The difference in the case of pneumonia is less, the death rate for the whites being 1679, and for the colored 3688 per 100,000. The rates in the case of homicides are interesting, not because the deaths from this cause form a large proportion of all the deaths, but because of the disparity between the two races; the rate among the whites is 128 per 100,000, among the Negroes 844, or over six times as great. The prevalence of consumption and pneumonia is due rather to negligence, ignorance, and poverty than to any physiological race characteristic. Negroes go insufficiently clothed in cold weather, are careless about wet clothing, are unwilling to call for medical attendance until the last moment, are ignorant of the laws of hygiene and sanitation, and live in surroundings that favor the spread of bacteriological diseases.

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[1] See Billings, *Vital Statistics of Cities*. Atlanta University Conference, I.

The figures for patients treated at the small-pox hospital in years when there has been an epidemic of that disease, are here given: —

TABLE XV.

PATIENTS TREATED AT THE SMALL-POX HOSPITAL IN SELECTED YEARS.

Year.	Total Number.	White.	Colored.	
			Number.	Per cent of Total.
1869	271	140	131	48.33
1872–73	1,244	1,021	223	17.92
1873–74	157	136	21	13.46
1874–75	467	392	75	16.08
1881–82	344	241	103	29.94
1883–84	777	630	147	18.92

(The "colored" here, as in tables VIII and IX, include Chinese and Indians, but their numbers are not large enough materially to vitiate the statistics.) The colored patients formed from 13.46 per cent to 48.33 per cent of the total number, though they have never composed much over 7 per cent of the population of the city. In the epidemic of the winter of 1872–73 the mortality among the native-born colored patients (*i.e.*, the Negroes) was 45.39 per cent of the total number of cases, while among the native-born whites it was only 33 per cent. These figures, like those for consumption and pneumonia, point to constitutions weakened by bad sanitary conditions, poor food, and general carelessness.

The only facts that can be said to be established by the vital statistics presented are that the death rate is almost twice as great among the Negroes as among the whites, but that the difference is slowly decreasing; that the excess of mortality among the Negroes is greatest among children under five years of age; and that pulmonary diseases are responsible for a large number of the other deaths. To one who has seen the conditions under which a large part of the Negro population of the city lives the death rates seem small and argue for vitality in the race rather than against it.

A comparison of the white and colored by social classes would doubtless show small differences in the death rate within the same class. The distribution in wards offers a rough class division, but unfortunately the deaths by wards were not obtainable. The noticeable decrease in the death rate since 1880 is one of several indications that the economic condition of the Negroes in St. Louis is improving.

6. PROPERTY.

It has been impossible to obtain data for the amount of property owned by St. Louis Negroes. The city records make no distinction of color on the tax rolls, and the subject apparently has never been investigated. Some indication of the conditions may be found in the United States census figures in regard to the ownership of homes.

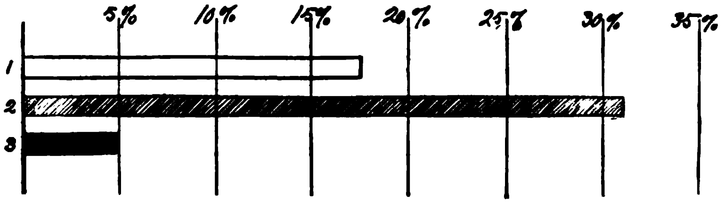
TABLE XVI.—(DIAGRAM VI.)

PERSONS OWNING AND HIRING HOMES IN ST. LOUIS, 1900.

Nativity and Race.	Number.			Per Cent.		
	Owners.	Tenants.	Unknown.	Owners.	Tenants.	Unknown.
St. Louis . . .	26,804	90,983	3,336	22.13	75.11	2.76
Native born Whites	11,061	50,145	1,922	17.53	79.43	3.04
Foreign born "	15,314	33,036	996	31.04	66.94	2.02
Negroes	428	7,739	412	4.91	90.29	4.80
Other Colored .	1	63	4	1.47	92.65	5.88

DIAGRAM VI.—(TABLE XVI.)

PERCENTAGE OF HOUSES OWNED BY OCCUPANTS, 1900.



1. Native born Whites. 2. Foreign born Whites. 3. Negroes.

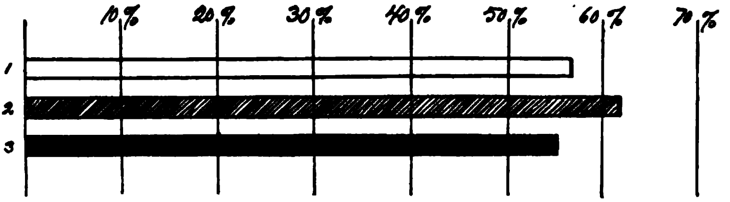
TABLE XVII.—(DIAGRAM VII.)

FREE AND ENCUMBERED HOMES, 1900.

Nativity and Race.	Number.			Per Cent.		
	Free.	Encumbered.	Unknown.	Free.	Encumbered.	Unknown.
St. Louis . . .	16,097	9,699	1,008	60.05	36.18	3.77
Native born Whites	6,259	4,338	464	56.59	39.22	4.19
Foreign born "	9,602	5,186	527	61.89	33.43	4.68
Negroes	236	175	17	55.14	40.89	3.97
Other Colored .	....	....	1	0.00	0.00	100.00

DIAGRAM VII.—(TABLE XVII.)

PERCENTAGE OF HOUSES OWNED FREE OF ENCUMBRANCE, 1900.



1. Native White. 2. Foreign White. 3. Negroes.

Of the foreign-born white householders over 31 per cent owned the houses they occupied, but of the Negroes less than 5 per cent. The native-born white persons held a middle ground, 17.53 per cent of them owning the houses in which they lived. The superiority of the foreign element in this respect is due to the large number of Germans. In point of encumbrance on houses that are owned there was less difference between the three groups, and the Negroes were only a little behind their white fellow-citizens of native birth. This may mean that the homes of the Negroes are too poor to be mortgaged, but it is more probably a genuine indication of prosperity in the 5 per cent who do own their homes.

In the last ten years the condition of the Negroes in St. Louis has improved considerably, and general observation shows that one accompaniment of this improvement has been the acquisition of property, both for business purposes and for homes. The discriminating rents already referred to have had some influence in this direction, for the more intelligent and more able Negroes have seen that it would be cheaper in the long run to buy their houses than to rent them. The neighborhoods where this change is taking place are those mentioned above as being occupied by well-to-do Negroes,— certain streets in wards 22, 23, and 25. There are a few comfortable Negro homes also scattered along two or three streets otherwise almost wholly German, in spite of the antipathy that exists between the German and the Negro in economic relations. In addition to this disposition to buy real estate, it is evident from the study of business enterprises that the Negroes are accumulating capital. That there is a strong tendency towards acquiring property, seems beyond a doubt; it has been mentioned by several prominent Negro citizens as one of the hopeful indications in regard to their race in this city. There are serious obstacles in the way of race prejudice and the poverty that makes difficult a start in the upward direction, yet one cannot but feel that in St. Louis, as in Philadelphia, the chief reason why the Negroes do not own far more property already is "misdirected energies"; and that "if the Negroes had bought little homes as persistently as they have worked to develop a church and secret society system, and had invested more of their earnings in savings banks and less in clothes, they would be in a far better condition to demand industrial opportunity than they are today."[1]

7. OCCUPATIONS.

The occupations engaged in by the Negro show more clearly than anything else, perhaps, his industrial value. The consensus of opinion among the intelligent Negroes of St. Louis, who are acquainted with conditions in other cities, seems to be that there is less opportunity for the Negro here than in cities either farther south or farther north, the reasons given being that farther south he has a monopoly of many occupations, including certain trades, and there is comparatively little organization of labor, and farther north white men do not object to working side by side with him. This may very well be true. In the absence of any general statistics for occupations[1] it has been necessary to arrive at existing conditions by putting together bits of information obtained in various ways. It is not claimed that the results are accurate in the sense of exhaustive, but they may be trusted as giving indications from which the general state of affairs may be inferred.

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[1] Du Bois, p. 185.

There is now a considerable professional class among the Negroes, consisting of teachers, preachers, physicians, lawyers, and dentists. The colored schools are taught entirely by Negroes, and in 1899–1900 they employed 17 men and 87 women, a total of 104. There are over thirty organized Negro churches, which implies about as many clergymen employed in their profession. The highest salary received by any of them is $1700. Five or six are well-educated, intelligent men, with a high ideal of the responsibilities of their position, and a high standard of morality. The rest are more or less open to the charges brought by Colonel Thomas against the religious leaders of the race all over the country. Next to the clergymen in numbers come the physicians, of whom there are fourteen. Of these, one has been practicing here twenty-two years, five between seven and twelve years, and the other eight less than five. Five are graduates of Howard University, five of Meharry College, one of Harvard, one of the University of Pennsylvania, one of the Chicago College of Physicians and Surgeons, and the one optician of Hardins Optical School. Only one of these fourteen carries on any other occupation. Their patients are almost entirely from the colored people. One, who has been here ten years and has an excellent reputation, has a few white patients. They came to him at first by accident and then continued to patronize him. Two others, whose offices are in districts inhabited by poor whites as well as Negroes, report that they have both white and colored patients. But almost the whole patronage is drawn from the Negroes. To this list should be added a masseur, who is said to do good work. He has been for two months in attendance on an invalid in another part of the country. There are two dentists with an excellent practice, one of whom has been here nine years, the other, five; they are graduates of Meharry College and of the Chicago College of Dentistry, and they have both white and colored patients. A small straw, which yet indicates something of the direction of the social wind, is that the Negroes are beginning to pay considerable attention to their teeth. There are ten well-established lawyers; one of these has been practicing in St. Louis for twenty-five years, one for fourteen, one for nine, and the others from two to five. Three are graduates of Ann Arbor, three of Howard University, two of the St. Louis Law School, and two received their education in private schools. Three carry on side occupations. Their clientèle is made up almost wholly of Negroes. The man who perhaps stands at the top of this list, tells me that white men sometimes come to consult him, having seen his name in the paper, but when they see him, they almost always excuse themselves. Taking it altogether the professional class is distinctly creditable to the race.

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[1] A special report dealing with occupation in relation to race and nationality is promised by the authorities of the Twelfth Census.

The entrepreneur class among the Negroes of St. Louis has been of recent development, but it is no longer a negligible quantity. Fifteen years ago there was scarcely an enterprise to be found conducted by Negroes, apart from the barber shops and one saloon; this summer there are certainly over a hundred. Seventy-five, including all of the most important ones (except in the case of barber shops) have been investigated: these seventy-five enterprises are carried on by 121 persons, and employ 329 others; the capital invested is $66,650. The amount of capital is probably exaggerated in some cases, but in four others it was not given at all, on account of an irremovable fear that in some way the information if given would get to the new license commissioner, who is taxing business to the limit of the law. The results of the investigation are here tabulated: —

TABLE XVIII.

SEVENTY-FIVE BUSINESS ENTERPRISES, 1901.

Character of the Business.	Number of Firms.	Number in Firm.	Capital Invested.	Number of Employees.
Undertakers	2	4	——	23
Druggists	2	5	$3,500	6
Grocers	7	36 [1]	8,400	15
Saloonkeepers	11	13	17,000	48
Restauranteurs and caterers	8	9	3,400	36
Paper-hangers	2	3	800 [2]	5
Expressmen	2	3	1,600	7
Contractor	1	1	——	27
Coal and ice dealers	7	10	5,300	20
Barbers [3]	15	16	19,400	95
Cigar manufacturers	2	2	700	4
Veterinary surgeon	1	1	700	15
Miscellaneous	15	18	5,850	38
Total	75	121	$66,650	329

[1] The coöperative company, with 20 members.

[2] Only one of the two firms.

[3] Very incomplete; only a few representative firms.

The most considerable business is one of the undertaking firms, which has been established six years, employs twenty men, and had charge of more funerals last year, all among Negroes, than any other firm in the city, white or colored. The drug stores and several of the groceries are quite flourishing; they are situated in the Negro quarters and are patronized chiefly by Negroes, though they have some custom from the white people in the same neighborhood. The saloons are perhaps the most profitable of all the enterprises engaged in: one has been established since 1879, and has $5000 invested in it; five of them are near the Union Station, the others are in distinctly Negro localities. The color line seems not to be drawn among their clientèle, but the white customers are, of course, of the lowest class. The restaurants are small affairs which cater almost exclusively to Negroes; some of them sell cooked food to be taken home. None of the fine caterers of the city are Negroes. The list of barber shops is by no means complete; this business is still largely in the hands of the Negro; he has not been supplanted here, as in Philadelphia,[1] by Germans and Italians. There are indications that this may take place in the future, for the shops in some of the leading hotels are conducted by white men, but up to this date it may be said that the best barbers in the city are Negroes. The coal and ice dealers given are only those who have a considerable trade. There is almost any number of ephemeral little businesses in coal, ice and watermelons, established in shanties or sheds all over the city. The fifteen "miscellaneous" enterprises include one milliner, one tailor, two dressmakers, one hairdresser, two artists, one printer, one dyer and cleaner, three blacksmiths, one wagonmaker, one jeweler, and one dealer in teas and coffees. Of these 75 enterprises 27 have been established in the last year, and only 9 were in existence in 1890. The disposition on the part of the Negroes to patronize their own race is growing, and affords a reason for believing that there is room for further development along this line of individual undertakings.

There are three weekly newspapers published by Negroes. All are political organs. One has a circulation of about 2000, and another of 1000; they are small sheets, filled chiefly with accounts of past excursions, barbecues, and "sociables," announcements of similar functions in the future, personal notes, and advertisements of Negro businesses and of lotions for bleaching the skin and preparations guaranteed to make curly hair straight. The Democratic organ, *The American Eagle*, has recently made an editorial change which promises radically to improve the paper; it consists now of eight pages, and contains some general news and a story or two.

The Negro is practically excluded from all trades in St. Louis by the attitude of the labor organizations. Carpenters, bricklayers, and plumbers can get work only from the one Negro contractor. Negroes cannot be employed as clerks in any of the department stores, nor in any factories with the single exception of the tobacco factories. There are certain processes in the preparation of tobacco where the heat required is so great that white laborers cannot be used; in these departments the Liggett and Myers-Drummond Branch of the Continental Tobacco Company employ about 350 Negroes, making 13 per cent of the total number of laborers. The Negroes in this case are not associated with the white employees, and there is no possibility of comparing their efficiency with that of white laborers, because white labor is not employed for the same sort of work. Negroes are employed in the engine room, and as janitors in many of the factories, but not in the manufacturing processes. At the time of the street-car strike in 1900 the Transit Company took on about 200 Negroes for work at the power houses, and these, I believe, have been retained. I have not been able to discover any other instance where Negroes are employed in large numbers. The responsibility for this exclusion of the Negro from the trades lies with the white workman, rather than with the white employer; the large number of foreigners, chiefly Germans, in St. Louis make the outlook for the Negro far from encouraging in this respect, for they seem to have more race prejudice in business relations than the native-born American, and they even now control the trade organizations. An old Negro who has lived in St. Louis for forty years and has been a political leader and otherwise prominent for almost as long said to me: "I'd take my chances every time with a native American rather than a foreigner." And this seems to be the general opinion.

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[1] Du Bois, p. 116.

Between 85 and 90 Negroes are in the employ of the city and federal governments. There are 40 in the postoffice[1]; of these 14 are in the mailing division, 14 are carriers, 11 are in the city distributing division, and one is in the general delivery department. The city employees include 4 clerks,

[1] Figures furnished by the Assistant-Postmaster.

2 detectives, 2 deputy-sheriffs, 2 deputy-marshalls, 1 license inspector, 2 water inspectors, and between 30 and 35 janitors.[1] An important position often filled by Negroes is that of janitor in the large office buildings. Some of these janitors have held their positions for fifteen or twenty years. They employ their own assistants, sometimes to the number of twenty-five, and are responsible for the condition of the whole building. There are many musicians, who play the organs at the Negro churches and give private lessons, and there is an orchestra which furnishes music for most of the social functions. There are several stenographers, probably more than there is work for, and there are at least three trained nurses. Four or five St. Louis Negroes have made inventions which promise to be successful. All of this, however, accounts for only a small percentage of the Negroes engaged in gainful occupations. The great mass is employed in so-called "menial" work: the men are hod-carriers, day laborers on the streets and at the levee, draymen, teamsters, porters, janitors, elevator boys, and domestic servants. The women are chiefly laundresses and house servants. The only figures I can find that indicate at all the proportion of the population engaged in different occupations are those for the occupations of the parents and guardians of the public school children in 1897–98.[2] It appears from these figures that 95 per cent of the parents and guardians of the 4785 colored pupils were engaged in personal service and unskilled labor. Some think that there is a tendency to displace Negro servants by white ones; it is difficult to judge whether this is true or not. There are two reasons why it may be: *first*, that a growing proportion of the substantial population of the city is German, and a German family rarely employs a Negro servant; and *second*, that the younger Negroes are learning to disdain domestic service, and go into it only when compelled to, and consequently with little interest and less

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[1] Furnished by Mayor Wells.

[2] *School Board Report*, p. 240.

preparation for it, and so prove less efficient than foreign or native white girls.

On the whole it would seem that in the past decade a distinct advance has been made in the economic condition of the St. Louis Negroes, in spite of the fact that many occupations are entirely closed to them and probably will continue to be. However difficult it has been to accomplish, it is certainly a fact that a property-holding class has differentiated itself from the mass of the improvident. The growth in the number of individual enterprises is significant apart from the evidence it gives of capital accumulated, for it seems to point to a growing appreciation of the necessity for mutual support. Perhaps it is not too much to predict that the time will come here when the wants of the Negroes will be supplied almost wholly by their own race. In a place where there is small indication that the Negro and the white man will ever work together side by side this tendency suggests a solution.

8. Social Condition.

Education.

Before the civil war the instruction of Negroes was forbidden by state law in Missouri[1] as in most of the other slave states, but in February, 1865, in compliance with the demands of the state legislature, the St. Louis Board of Education adopted a report recommending the establishment of one or two schools for colored children.[2] In spite of "strenuous efforts" a delay was occasioned by a "difficulty in finding suitable rooms," but during the next year three schools were established, with an average daily attendance of 294.[3] The provision has been increased gradually, until there are twelve district schools, eight of which have kindergartens, one high school, including a normal course, and two evening schools. Negroes are not admitted to any of the public schools except those that are maintained exclusively for them. The value of the property used for colored schools in 1899 was $341,181.99 out of a total valuation of $5,163,642.39.[1] When the first free public schools were opened the demand for instruction was being met by several other schools, which were supported by the Freedmen's Bureau, by benevolent societies, and by tuition fees.[2] At present there are no private schools for Negroes in the city. In the early years it was, of course, necessary to employ white teachers in the colored schools, but in 1877 the School Board decided to substitute Negroes if a sufficient number properly qualified could be found. This attempt was successful, and for twenty-six years the colored children have been taught by men and women of their own race. Three of the men who responded at the first call for teachers are still connected with the schools as principals. The teachers in the high and normal school generally come from well-known colleges and universities, and are rarely St. Louis Negroes. The grammar schools and kindergartens, on the other hand, are almost entirely supplied with graduates of the normal course in the Sumner High School. The high school course was introduced in 1877–78. The school is a commodious, pleasant building, and seems to be well equipped. The equipment includes a good chemical laboratory, and a room for domestic science. The domestic science class, whose members are drawn from the district schools as well as the high school, numbered 78 in 1899-1900.[3] For thirteen years a manual training class has been carried on in the L'Overture school; there were 103 boys enrolled in this class in 1899–1900.[1] The first kindergarten for colored children in St. Louis was established about twenty years ago; for eight years it was carried on by a white teacher, but in 1889 a young colored woman was graduated from the kindergarten training school, and was given charge of the colored kindergarten. Since then this branch of education also has been in the hands of Negro women. There are now 8 kindergartens, with 25 teachers. A training school is maintained, with an average of 10 pupils. Some of these graduates find places here and some go away to other places; two have opened kindergartens in Kansas City, one of the class of 1901 went to Atlanta in September of that year, and another to take charge of the first kindergarten at Tuskeegee Institute. In regard to the character of the colored schools, in general, Prof. F. Louis Soldan, the superintendent of instruction, has stated his opinion as follows:[1] "The work which the Negro pupils are doing in the public schools is very remarkable considering the disadvantages under which they labor. Their home surroundings; the facilities, or rather the lack of facilities, they have for study; the absence of books in their homes — all these must be taken into account in judging of the progress made. The colored teachers at work in our schools deserve the greatest praise. They are intelligent, industrious, and devoted to the cause of their race."

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[1] Hyde and Conard, article *Slavery*.

[2] *School Board Report*, 1865-66, p. 7.

[3] *Report*, 1866-67, pp. 31-33.

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[1] *Report*, 1898-99, p. 257.

[2] *Report*, 1876–67, pp. 31–33.

[3] *Report*, 1899-1900.

The following table has been compiled from the school board reports from 1866–67 to 1900–01. The number enrolled is presented because the average daily attendance could not in every case be secured, but the latter would give a truer view of the amount of schooling received by white and colored. Up to 1884–85 it is impossible to give the figures for the high schools, and consequently for the total enrollment.

There has been a pretty steady increase in all classes of schools since 1867. The only remarkable exception is the falling off in the colored schools in the last few years. This is probably due to business prosperity, which implies an increased demand for labor of all sorts. Many colored boys and girls go to school because they cannot get work, and leave as soon as opportunity offers for them to become pro-

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[1] **Personal letter, June 22, 1901.**

TABLE XIX.

PUPILS ENROLLED IN PUBLIC SCHOOLS, 1866–1901.

Year.	White.			Colored.		
	District Schools.	High School.	Total.	District Schools.	High School.	Total.
1866–67	14,851	....	....	437	....	....
1867–68	17,079	....	....	924	....	....
1868–69	19,764	....	....	917	....	....
1869–70	22,562	....	....	1,249	....	....
1870–71	25,329	....	....	1,560	...	....
1871–72	27,901	....	....	1,568	....	....
1872–73	30,878	....	....	1,694	....	....
1873–74	31,406	....	....	1,727	....	....
1874–75	32,766	....	....	1,634	...	....
1875–76	35,262	....	....	1,503	....	....
1876–77	39,133	....	....	1,831	....	....
1877–78	45,506	....	....	2,484	....	....
1878–79	45,328	....	....	2,934	....	....
1879–80	47,030	....	....	3,670	....	....
1880–81	46,867	....	....	3,652	....	....
1881–82	48,267	....	....	4,055	....	....
1882–83	49,912	....	.. .	4,225	....	....
1883–84	47,914	....	....	4,366	....	....
1884–85	48,669	907	49,576	4,391	20	4,411
1885–86	48,955	949	49,904	4,411	43	4,454
1886–87	49,540	1,106	50,648	4,497	74	4,571
1887–88	51,072	1,177	52,349	4,675	84	4,759
1888–89	50,609	1,332	51,941	5,079	99	5,178
1889–90	51,656	1,482	53,138	5,022	114	5,136
1890–91	53,078	1,521	54,599	4,874	146	5,020
1891–92	55,587	1,533	57,120	5,092	196	5,288
1892–93	58,172	1,645	59,817	5,145	210	5,345
1893-94	61,311	1,856	63,167	5,459	212	5,671
1894–95	62,803	1,967	64,770	5,448	210	5,658
1895–96	65,628	2,049	67,677	5,605	247	5,852
1896–97	67,151	1,958	69,109	5,573	268	5,841
1897–98	68,154	1,983	70,137	5,524	261	5,785
1898–99	68,998	1,855	70,853	5,139	252	5,391
1899–1900	70,468	1,993	72,461	5,552	250	5,802
1900–1901	71,173	2,073	73,246	....	....	5,375

ductive members of their families. This is equally true of the poorer classes of white pupils, but the poorer classes form a much smaller proportion of the total number of white pupils than of the total number of colored pupils. And so the same causes that operate to increase attendance at the white schools will decrease it at the colored.

In the next table is shown the proportion of children in school to the total population at each census year.

TABLE XX.—(DIAGRAM VIII.)

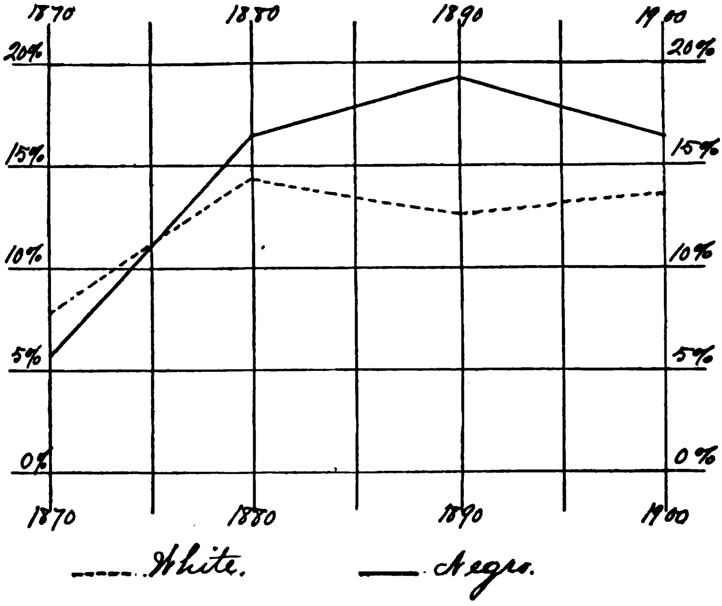
PROPORTION OF CHILDREN IN SCHOOL TO TOTAL POPULATION AT THE CENSUS YEARS.

Year.	White.			Negro.		
	Total Population.	Enrolled in School.		Total Population.	Enrolled in School.	
		Number.	Per cent.		Number.	Per cent.
1870	288,737	22,562 [1]	7.81	22,088	1,249	5.65
1880	328,191	47,030 [1]	14.33	22,256	3,670	16.44
1890	424,704	53,138	12.51	26,865	5,136	19.12
1900	539,385	72,461	13.43	35,516	5,882	16.34

[1] Exclusive of the High School.

DIAGRAM VIII.—(TABLE XX.)

PERCENTAGE OF TOTAL POPULATION ENROLLED IN SCHOOL, 1870-1900.



The noticeable thing is that in each year except 1870 the proportion of colored children in school has been larger than the proportion of white children. This may be accounted for by the number of white children who are in private schools in the city and elsewhere, and by the difference in the age constitution of the classes. The proportion of children in the Negro population is greater than among the native-born whites, and much greater than among the foreign born.

A comparison, however, of the number enrolled with the population of the school age in 1900, shows that 61 per cent of the Negroes, but only 43 per cent of the white children between 5 and 20 years of age, were in school.

TABLE XXI.

PROPORTION OF POPULATION OF SCHOOL AGE ENROLLED IN THE PUBLIC SCHOOLS, 1899-1900.

Population Group.	Population of School Age.	Enrolled in School.	
		Number.	Per cent of Population.
White	169,974	72,461	42.63
Negro	9,541	5,802	60.81

The number of pupils enrolled does not fairly represent the number in school, and the amount of absence is always greater among the Negroes. They are taken out of school whenever any casual employment presents itself, and much time is lost from sheer lack of sufficient clothing. And so the difference between the number of children enrolled and the average daily attendance is greater among the Negroes than among the whites. In 1900 the average daily attendance at the white schools was 9.96 per cent of the total population, and at the colored schools, 9.52 per cent. The proportion of teachers to pupils is found to be about the same; there are 59 white pupils to each teacher and 56 colored.

The age of the pupils in the various grades is interesting:—

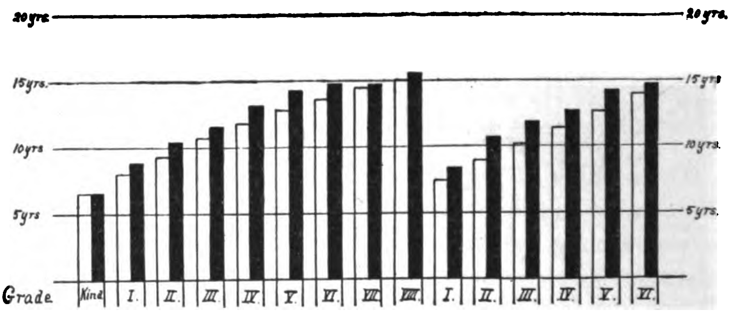
TABLE XXII.—(DIAGRAM IX.)

AVERAGE AGE OF PUPILS, 1898–99; YEARS AND MONTHS.

Class of Schools.	Kindergarten.	Grade I.	Grade II.	Grade III.	Grade IV.	Grade V.	Grade VI.	Grade VII.	Grade VIII.
White, with kindergarten .	6:7	8:0	9:3	10:7	11:9	12:9	13:7	14:6	15:1
Colored, " " .	6:7	8:10	10:4	11:6	13:1	14:3	14:9	14:9	15:7
Difference	0	0:10	1:1	0:11	1:4	1:6	1:2	0:3	0:6
White, without kindergarten	—	7:6	9:0	10:2	11:5	12:8	14:0	15:1	15:1
Colored, " "	—	8:5	10:8	11:11	12:8	14:3	14:9	—	—
Difference	—	0:11	1:8	1:9	1:3	1:7	0:9	—	—

DIAGRAM IX.—(TABLE XXII.)

AVERAGE AGE OF PUPILS



Schools with kindergartens. **Schools without kindergartens.**

There is no difference in the kindergartens, but everywhere else the Negroes are older than the white pupils by from three months to one year and nine months. The difference is least in the upper grades, showing that it is the "fittest" among the Negroes who survive to reach them.

The following table gives the age of pupils in the evening schools:—

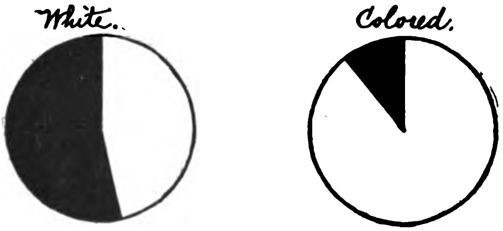
TABLE XXIII.—(DIAGRAM X.)

AGE OF PUPILS IN EVENING SCHOOLS, 1899–1900.

Ages.	White.		Colored.	
	Number.	Per cent.	Number.	Per cent.
12	97	4.5	3	1.1
13	220	10.3	6	2.2
14	399	18.7	12	4.3
15	427	20.1	9	3.2
16	384	18.0	17	6.1
17	250	11.7	25	8.9
18	144	6.8	17	6.1
19	119	5.6	23	8.2
20	91	4.3	167	59.9
Total	2,131	100.0	279	100.0

DIAGRAM X.—(TABLE XXIII.)

AGES OF PUPILS IN EVENING SCHOOLS, 1899–1900.



Black segment = pupils 12–15 years of age.
White " = " 16 years or over.

Fifty-three and six-tenths per cent of the white pupils are between 12 and 15 years of age, but only 10.7 per cent of the colored. On the other hand, only 4.3 per cent of the white pupils are 20 or over, in comparison with almost 60 per cent of the colored. This is perhaps a consequence of the fact that comparatively few occupations are open to Negro boys who, therefore, have nothing to do but to go to the day schools, and so there are actually fewer Negroes than whites at the earlier ages who are "eligible," so to speak, for the evening schools.

It would seem that the city provides very satisfactorily for the education of the Negro from the kindergarten through the high-school course, and that the Negro improves his opportunities. Recently an attempt has been made[1] to establish an educational lecture course for the "more enlightened elements" of the adult colored population. A course of eight lectures on American history was given on Saturday evenings during the winter. Another feature was added in the shape of a short "practical talk" at the beginning of the evening. The speakers were all prominent white citizens. These evenings drew an average attendance of over 200, limited only by the size of the hall, and the enthusiasm kept up to the end of the course. Mr. Sheldon thinks that the attempt was highly successful.

The effectiveness of this unusually good provision for the education of the Negroes may be tested in a crude way by an inquiry into the proportion of illiterates in the population.

TABLE XXIV.

PROPORTION OF ILLITERATES IN POPULATION OVER 10 YEARS OF AGE, 1900.

Color and Nativity.	Population over 10 Years of Age.	Illiterates over 10 Years of Age.	
		Number.	Per cent of Population.
Native white of native parentage	129,111	1,348	1.04
Native white of foreign parentage	289,551	1,666	0.58
Foreign-born white	110,021	10,764	9.78
Colored	30,568	6,581	21.53

The colored are by far the most illiterate element of the population, having more than twice the proportion found among the foreign born. An analysis of the colored illiterates by age and sex, however, is somewhat illuminating.

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[1] Described by Mr. Sheldon in *The Nation*, April 11, 1901.

TABLE XXV.

PROPORTION OF ILLITERATES IN THE COLORED POPULATION BY AGE PERIODS AND SEX, 1900.

Age.	Population.		Illiterates.			
			Number.		Per cent of Population.	
	Male.	Female.	Male.	Female.	Male.	Female.
All over 10 years	15,298	15,607	2,600	3,981	17.00	25.51
10-14 "	1,378	1,504	54	35	3.92	2.33
15-19 "	1,514	1,797	116	106	7.66	5.90
20-24 "	2,154	2,385	138	168	6.41	7.04
25-34 "	4,182	4,209	413	690	9.87	16.39
35-44 "	3,003	2,679	569	941	18.95	38.86
45-54 "	1,693	1,572	603	976	35.55	62.09
55-64 "	762	759	373	564	48.95	74.31
65 and over . .	406	509	275	382	67.73	75.05
Unknown . .	203	198	59	119	29.06	60.10

This reveals the fact that the burden of illiteracy falls on the female part of the population and on the later age periods. Among both men and women the percentage of illiterates increases steadily after the age of 20. Seventy-three per cent of all the illiterates are over 35 years of age. It is, therefore, the Negroes born in slavery or during the civil war who are illiterate, and the low percentages between 10 and 25 would seem to signify that the younger generation is making use of its educational opportunities.

Pauperism.

The agencies which deal with cases of distress among the Negroes of St. Louis may be divided into four classes. First, there are the city institutions, the poor house, the hospitals, and the House of Refuge. Next comes the Provident Association, the only philanthropic institution among the white people which does anything for Negroes. Then there are the Negro societies described below, which are pitifully inadequate, and the Negro churches. And, finally, there is the work of individuals, both white and colored, and in this last class, without doubt, comes most of the relief given. The charity of the city is only slightly organized. The Provident Association wishes to "serve as a center of inter-communication" for the various philanthropic agencies, public and private, but this object is subordinate to its primary one of giving relief to all worthy applicants not coming under the care of some other society or church. Not only are the charitable societies practically unorganized but much of the relief work in the city is done by individuals not connected even with an independent society.

The amount of relief given by these four agencies cannot even be estimated. The reports of the city poor-house make no distinction of color except in the single item of burials; why the exception should be made is hard to see. The following table, of admissions to the city hospital, means something, but not much: —

TABLE XXVI.

ADMISSIONS TO THE CITY HOSPITAL, 1887-1897.

Year Ending April 1.	Total.	White.	Colored.	
			Number.	Per cent of Total.
1887	5,960	5,409	551	9.25
1888	6,479	5,884	595	9.19
1889	6,597	5,960	637	9.65
1890	6,201	6,111	590	9.51
1891	6,915	6,233	682	9.86
1892	8,249	7,390	859	10.41
1893	9,120	8,244	876	9.60
1894	10,229	9,422	807	7.88
1895	—	—	—	—
1896	9,623	8,017	1,606	16.69
1897	11,412	9,866	1,546	13.54

It appears from this that during ten years 6 per cent of the population furnished from 7.88 per cent to 16.69 per cent of the patients treated. This should be taken as an indication of poverty among the Negroes, rather than of susceptibility to disease. The proportions would be greater if it were not for that aversion to institutions which makes the

Negro keep away from them as long as he can. I know of no reason for the exceptionally large figures in 1896 and 1897. The House of Refuge serves in the double capacity of orphan asylum and house of correction. In the year 1900, 194 of the 433 commitments were for maintenance, and of these 194 only 14, or 7.22 per cent, were colored children. The Provident Association in the year ending October 31, 1900, gave relief to 1975 families, of which 261, or 13.21 per cent, were colored. The Negro churches care for their poor members to a certain indefinable extent, and their societies do a little. But most of the help, it must be concluded, lies outside all organization in the hands of individuals. White men and women help their servants and ex-servants in many ways, but to an incalculable extent by gifts of food and clothing, and the Negroes themselves are always ready to share their shelter or their dinner with an unfortunate friend or neighbor.

Nothing more definite can be said in regard to the amount of pauperism, in the sense of poverty pushed to the point of requiring relief. The amount of poverty among the Negroes can be estimated from their occupations and habitations. The line between poverty and pauperism is farther down among the Negroes than among the whites, because of their lower standard of living, and I should judge it must be lower down in St. Louis in general than in many other cities, because of the low price of food. Fruit and vegetables, especially, are obtainable in season for almost nothing, and a "nickel's worth" of bananas or watermelon will content a Negro for a day. For this reason, although poverty is palpably great and wide-spread among the Negroes here, it probably does not mean so much suffering as one would at a first view suppose.

Crime.

The amount and character of the crime committed by the Negroes is another subject on which the statistics are disappointingly meagre. The reports of the police department give figures for arrests for certain years since 1876.

·TABLE XXVII.—(DIAGRAM XI.)

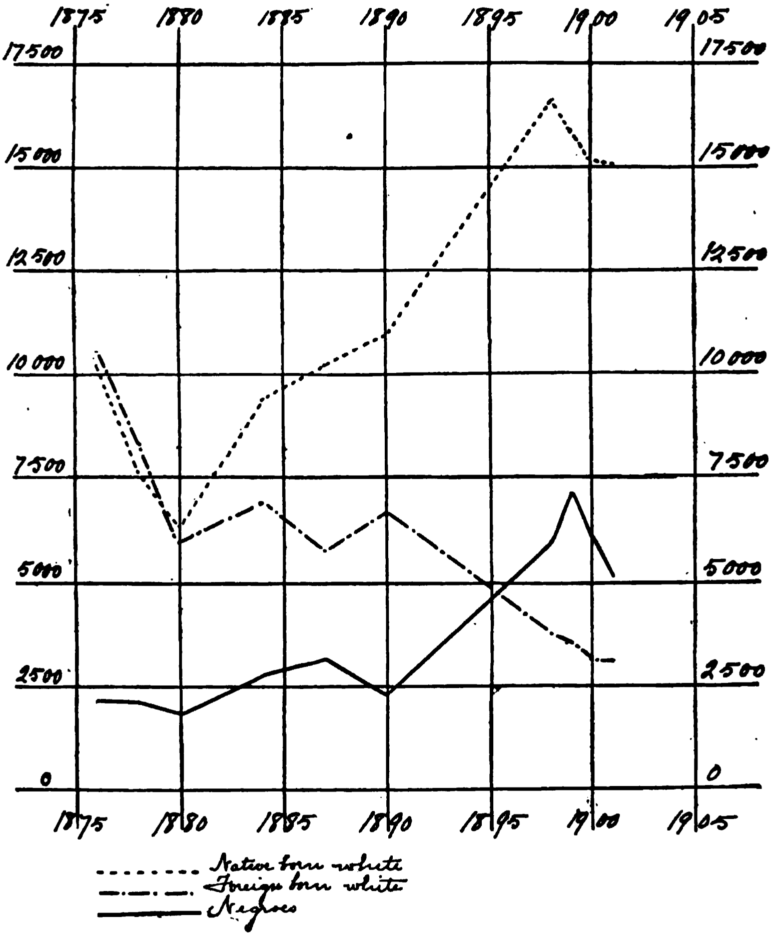
ARRESTS IN ST. LOUIS, FOR CERTAIN YEARS, FROM 1876–1901.

Year Ending—	Numbers.				Percentages.			
	Total.	White.		Negro.	Total.	White.		Negro.
		Native Born.	Foreign Born.			Native Born.	Foreign Born.	
March 31, 1876	22,851	10,190	10,523	2,138	100.00	44.60	46.05	9.35
April 8, 1878	18,057	7,541	8,340	2,176	100.00	41.77	46.18	12.05
" 12, 1880	14,160	6,360	5,938	1,862	100.00	44.92	41.93	13.15
" 7, 1884	19,208	9,398	6,858	2,752	100.00	49.98	35.70	14.32
" 13, 1887	19,046	10,225	5,687	3,134	100.00	53.69	29.86	16.45
March 31, 1890	19,724	10,969	6,550	2,205	100.00	55.61	33.21	11.18
April 12, 1898	26,253	16,544	3,746	5,963	100.00	63.02	14.27	22.71
" 10, 1899	26,314	15,694	3,559	7,061	100.00	59.65	13.52	26.83
" 9, 1900	24,420	15,189	3,159	6,072	100.00	62.21	12.93	24.86
" 9, 1901	23,480	15,130	3,141	5,209	100.00	63.59	14.23	22.18

The number of arrests does not give an accurate measure of the amount of crime committed because it depends so largely on the personnel of the police force. In St. Louis a large proportion of the policemen are Irish, a circumstance that would argue a charitable attitude of forbearance towards the offences of a large part of the foreign-born population and an abnormal vigilance over the Negroes. The Negroes are more closely watched than the whites by any police force, on account of their reputation for crime, and are arrested on more trivial provocation. Allowing for all this, however, some value attaches to these figures, and the evidence is sadly against the Negro. With the exception of one year the Negroes furnished an increasing percentage of the number of arrests until 1898–99. Since then the number and the proportion has decreased slightly. In the year 1898–99, though forming only 6 per cent of the population, they furnished almost 27 per cent of the arrests. The foreign-born population, on the other hand, appears to be growing law-abiding even more rapidly than the Negro is becoming disorderly, the percentage formed by arrests among them having decreased from 46 per cent of the total number in 1876 to

DIAGRAM XI.—(TABLE XXVII.)

ARRESTS FOR CERTAIN YEARS BETWEN 1876–1901.



14 per cent in the last year,—a far smaller quota than this fifth of the population, with its undue proportion of males and of persons at the crime-committing age, is entitled to. I am inclined to think that much of this is due to official discrimination, dictated by political exigencies or the brotherhood of a common nationality. The increase in crime among

the native-born whites is due to the growing up of the "second generation," which is the element of population all over the country that furnishes the largest amount of crime in proportion to its numbers.

The statistics of commitments to the city jail are vitiated by the fact that the Negroes are rarely able to give bail while white men often are. For this reason they figure at a disadvantage even greater than in the number of arrests. Of the 2646 persons committed to the jail during the last fiscal year 895, or 33.82 per cent, were colored.[1] It is impossible to trace the history of these cases for the reason that the records of the courts where they were disposed of do not distinguish in regard to color.

The amount of juvenile crime should be indicated by the records of the House of Refuge, but unfortunately a classification by causes of commitment exists for only one year, 1900. This shows that only about 55 per cent of the total number of commitments was for purposes of punishment, the other 45 per cent being for maintenance. The following table gives the number of inmates for all causes on January 1st of each of the last ten years: —

TABLE XXVIII.

NUMBER OF INMATES IN THE HOUSE OF REFUGE ON JANUARY 1, 1892–1901.

Year.	White.		Colored.		Total.	Percentage of Negroes.
	Boys.	Girls.	Boys.	Girls.		
1892	175	42	35	22	274	20.8
1893	158	44	39	24	265	23.8
1894	187	62	37	22	308	19.1
1895	183	70	47	19	319	20.7
1896	152	51	37	24	264	23.1
1897	207	55	54	19	335	21.8
1898	203	50	54	10	317	20.2
1899	239	94	55	14	402	17.1
1900	232	94	83	18	427	23.6
1901	253	90	76	19	438	21.7

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[1] Figures furnished by the city jailer.

In spite of a few fluctuations the numbers of white boys and girls and of colored boys show a steady increase. The number of colored girls seems to be decreasing, but these figures are so small as to mean little. The superintendent could suggest no reason why there should be a decrease. The percentage furnished by the colored population averages about 20 per cent for the ten years, which is certainly no larger than would be expected.

The work-house statistics give some indications in regard to the less serious crime of adults: —

TABLE XXIX.

COMMITMENTS TO THE WORK-HOUSE, 1896–97.

Class.	Numbers.			Percentages.		
	Male.	Female.	Total.	Male.	Female.	Total.
Negroes . . .	760	438	1,198	28.25	54.82	34.33
Native whites .	1,467	199	1,666	54.51	24.91	47.74
Foreign whites	464	162	626	17.24	20.27	17.93
Total	2,691	799	3,490	100.00	100.00	100.00

The colored population furnishes far more than its proper quota here, and the women are especially conspicuous. Taken in conjunction with the statistics of arrests these figures point to the fact that a larger proportion of the crime committed by Negroes and foreign born is of a comparatively trivial nature than is true of that committed by the native-born whites; for while the Negroes furnish 22.18 per cent of the arrests they form 34.33 per cent of the number in the work-house, and the inference is that they must make a correspondingly smaller proportion in the State penitentiary. No statistics of the penitentiary which would give any facts about the St. Louis Negroes have been obtainable, and so there is no way of estimating the amount of serious crime committed by them. It is the general opinion, however, that they are growing more and more reckless in regard to homicides; the accounts in the daily papers would go to confirm this impression. The "rahzor," which is the most important article in the equipment of a certain large class of Negroes, is used freely on slight provocation. On the fourth of July, 1901, two young women ended their celebration of the day by a discussion of Horace Greeley, and when the difference of opinion seemed too great to admit of a verbal settlement one of the girls drew her knife and fatally wounded the other. A church excursion on a Sunday in June was the scene of another fatality. A slighting remark made in the train brought out knives and pistols, and resulted in the death of a woman, and the wounding of two men. In almost every day's papers an account may be found of a quarrel that ends in slashes and shots. The crimes which account for the large majority of Negro arrests are at the other end of the scale from homicide, petit larceny and gambling being without doubt chief among them. The favorite forms of gambling are "craps" and "policy." Items similar to this from the *Globe-Democrat* of September 2, 1901, are often seen: "The police made several successful raids early yesterday morning on crap-shooters and other unsavory places throughout the city. As a consequence the jail was well filled with colored people as well as a number of white men." The same paper gives a typical instance of a petty theft: "A Negro attacked an eight-year-old girl as she was going home from the butcher shop one morning and forced her to give him the seventy-five cents she had in her hand."

The causes of the excess of crime among the Negroes are not far to seek; it is the result of a moral sense imperfectly developed acting in a social environment where there is little incentive to virtue. Here again, if we could get data for a comparison of Negroes with whites in the same social strata it is questionable whether we should find a great difference.

Organization.

The Negro is learning organization; the most obvious evidence of this fact exists, I suppose, in the churches. The colored people of St. Louis have between thirty and thirty-five churches of their own and they rarely intrude into any others. Of this number one is Catholic, one Episcopalian, two Presbyterian, and the rest Methodist and Baptist. It has been impossible to obtain full statistics, but the following table shows the condition of four of the most important churches. All the figures are approximate.

TABLE XXX.

FOUR NEGRO CHURCHES.

Name.	Denomination.	Number of Members.	Seating Capacity.	Income for Last Year.	Expenses Last Year.			Property.	
					Pastor's Salary.	Other Expenses.	Total.	Valuation.	Indebtedness.
All Saints'	Prot. Episc.	270	350	$1,584	$650	$934	$1,584	$30,000	$5,000
St. Paul's	A. M. E.	900	1,500	6,600	1,700	4,500	6,200	57,000	23,000
Central	Bapt.	1,000	800	4,000	1,000	3,000	4,000	30,000	None
Centennial	M. E.	830	800	2,550	780	1,770	2,550	22,000	2,600

In point of the education and social standing of members the Episcopalian church undoubtedly heads the list, and the others follow in the order given. St. Paul's and the Central Baptist church have the finest buildings. There is a third building that should be classed with these, that of the Metropolitan A. M. E. Zion church, but I have not succeeded in getting any statistics about it. The $1700 received by the pastor of St. Paul's is the largest salary paid, and it is safe to assume that the Central Baptist is the only colored church in the city that is entirely free from debt.

The primary function of the church — the satisfaction of spiritual demands and the development of the spiritual life — is fulfilled perhaps as well as in Negro churches anywhere. Several of the clergymen, as has been said before, are men of high ideals and noble character; one in particular, who has been working here quietly and faithfully for twenty years, has done much to raise the standard of morality, not only in his own congregation, but also in the community at large; and there are several others who deserve to be classed with him. But, as a rule, the spiritual leaders are little above the level of their flocks.[1] Immorality is countenanced, and questionable amusements are allowed, and the emotionalism which is apt to pass with the Negro for religion is encouraged by the character of the instruction given,— all for the sake of making the church "popular" and raising enough money to pay expenses. The importance of the Negro church as a social center has often been noticed. Far more than is the case in white churches, the members of any congregation are in the same social "set" and most of their amusements are connected with the church.

Even more important than the churches in regard to the number affected are the secret and benevolent societies; it is estimated that there are over a hundred and fifty of them in the city and many Negroes belong to seven or eight. They are attracted by the mystery and the processions and titles and regalia of the secret organizations, and by the expectation of getting a substantial return, in the way of burial or sick benefits, for a very small outlay. The opinion of the intelligent Negroes on this point seems to be divided. Some agree that these societies and most of the insurance schemes are wholly deleterious, that they "waste the brain power, the moral, and the pecuniary power, which would redeem the Negro." Others, generally younger men, think that the disadvantages are more than compensated for by the education that is received in methods of organization.

There are many social clubs among both men and women. The Forum Club deserves mention; it had a membership in 1901 of 186, including most of the professional and prominent business men, and it owns a good club building; its object is the study of race problems; lynchings are investigated by agents, and reports on many points of interest are made at the monthly meetings.

During the summer of 1901 a Negro Business League was formed, with the object of improving the "commercial interests of the Negro business men of the city;"[1] the membership at the beginning was 36.

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[1] *Cf.* Du Bois, p. 202 and ff.

The Afro-American Young Men's Christian Home Association is a creditable organization that has been in existence six years. There were 105 members in 1901; their building is a three-story ten-room brick house which they were buying for $3300; they had paid $800 on it in the last two years. Their income amounted for the year to something over $1000, derived entirely from membership dues and entertainments. The members gather for a devotional meeting on Sunday afternoons, and for a literary and social evening once a week, and the building serves as a clubhouse. There is a "Young Ladies' Auxiliary" society which has rooms in the same building and carries on the same sort of work.

There are also among the Negroes several organizations looking towards social improvement. The Provident Hospital and Training School for Nurses is the most considerable of these; it was organized and incorporated in 1894 and has been very successful; the management is in the hands of a board of directors composed of eighteen colored men who are prominent in various ways; the staff includes most of the colored physicians of the city, a head nurse, and a lecturer on domestic science; there is a consulting staff of fourteen prominent white physicians and surgeons. The hospital is pleasantly situated in a three-story brick building, apparently well kept and in good repair; there is equipment for twelve patients, which comes far short of meeting the demands; there is no endowment and the association owns no property. The hospital building is rented. On the other hand, there is no debt; the current expenses, amounting to about $260 per month, are met by the pay from the patients and by money raised by the board of directors and the Ladies' Auxiliary. The patients pay from $5.00 to $7.00 per week if they are able; if they are not able they pay as much as they can, sometimes nothing. The cost per week per patient in 1901 was $7.14, and the receipts were only $3.60 per week from each patient. The deficit is made up by the directors and by the efforts of the Ladies' Auxiliary; this society undertakes to provide for the salary of the head-nurse and all the hospital linen; it has sixty members, and raises the money by "entertainments." A few contributions have been received from outside, but no general canvas of the white philanthropists of the city has ever been made; the largest single contribution ever received was $100. There are generally five nurses in training; three were graduated in June, 1901.

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[1] *Globe Democrat,* August 10.

The Colored Orphans' Home was founded by the colored W. C. T. U. immediately after its organization in 1889. At present the Home is located in three dilapidated old buildings, comprising fifteen rooms, in a very poor part of the city. A project is on foot for buying a desirable piece of property in the western part of the town, but no immediate realization of it seems probable. The mortality among the babies under present conditions is frightful, though, of course, the provision made is better than nothing. Abandoned colored children are boarded here by the city at the rate of $12 per month, and "half-orphans" are sometimes paid for. The only other sources of income are voluntary contributions, annual boat excursions, and occasional "concerts;" no trustworthy financial report could be obtained. The children attend the public school regularly while at the Home, and are under the care of a matron who seems to be wise and kind, and who does as much for them as any one could with the equipment she has. Homes are found in the country districts of Missouri when possible, and the matron keeps track of the children as long as she can after they leave. In August, 1901, there were 33 inmates; of these 14 were girls, and 19 boys; two of the 33 were under one year of age.

The colored W. C. T. U. numbers fifteen active members, and carries on work along several lines; a sewing school, with incidental temperance features, was conducted on Saturday afternoons last winter in a Negro quarter; certain members visit the jail, the work-house, the poor-house, and the hospitals, where they give "spiritual talks" and distribute creature comforts, in the way of flowers, food, and literature; one member gives temperance talks at the colored Sunday-schools. The finances of the Union are inconsiderable, but it seems to be an active body and to accomplish a certain amount of good.

The Old Saints' Home has been maintained for seven years by the Central Baptist church, and in that time has cared for about twenty old persons, presumably "saints." A seven-room house is rented for the purpose, but more room is needed and a fund for building has been started. The running expenses are between $700 and $800 per year. In the summer of 1901 there were seven inmates, including a man and his wife who had been married eighty-one years. Nominally any needy old Negro is received, but practically the limited equipment restricts the beneficiaries to members of the Central church. An applicant sent there recently by the Provident Association was refused.

The Nazareth Home is an interesting institution. It was started five years ago by a young colored girl who has since died, and is run by Negroes, though several white women are interested in it and have a general supervision. It is a non-sectarian home for old women and girls who come to the city to find work. The building occupied has eleven rooms, a good laundry, and a large yard. In July, 1901, there were 9 residents, 5 old women and 4 girls. The "staff" consists of a matron and a laundry superintendent. The aim of the promotors is to make the institution self-supporting, and to that end a laundry is carried on. The girls pay $1.25 per week and work a day and a half in the laundry. The old women do what they can. I was told that the income from the laundry and the fees from the girls amount to enough to cover all current expenses except the rent of the building. The principle is good, certainly, and the attempt bids fair to be successful.

A Penny Savings Bank has been carried on for four years by the pastor of one of the churches. The liabilities on July 20, 1901, showed deposits to the sum of $341.[1] An employment bureau is conducted in connection with the bank, primarily for members of the church. No fees are asked, but help is given as far as possible.

A day nursery has recently been established; it is due to the colored kindergartners of the city, who secured furnishings for the house and the contribution of a year's rent from a white philanthropist. They expect to have three attendants, and to have accommodations for from thirty to fifty children. A charge of five cents a day will be made.

A Rescue Home for Colored Girls was in existence for six months two or three years ago; it was established through the efforts of a poor, ignorant, colored woman who believes that she has a definite "call" to do that sort of work. During the six months she received and cared for fourteen girls and six babies. She says that the most encouraging feature of the work was the gratitude and humility of the girls, one of whom "was actually converted and baptized in the Mississippi river." The work lapsed through lack of funds but its divinely "called" promoter has not lost her enthusiasm and she is working now to get enough money to start again.

These attempts on the part of the Negroes to improve the condition of their race, however slight and crude and ineffective they may seem, nevertheless represent considerable effort in the right direction. They are hampered always by the poverty of the promoters and the indifference of the general public, and the achievement does not begin to express the expenditure of time and thought and energy. These institutions, I take it, and even the unsuccessful attempts that have been made, are just one of the most hopeful indications that we have; they evidence that spirit of mutual help, which, if it goes on developing, will do much to solve the Negro problem.

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[1] *The Palladium*, July 27, 1901.

Social Life.

The time is long past when it was in any degree just to regard the Negroes as a homogeneous mass, all having the manner of life and the desires of semi-savages, and happily the tendency so to regard them is fast passing. The four classes into which Dr. Du Bois divides the Negroes of Philadelphia exist here, and I cannot do better than to copy his classification,[1] with one modification, as a description of the grades of society. I find it necessary to change the description of Grade 3, for it is my impression that the poor and the very poor who are absolutely "honest" and "with no touch of gross immorality or crime" would form a very small class in St. Louis.

"*Grade 1.* Families of undoubted respectability earning sufficient income to live well; not engaged in menial service of any kind; the wife engaged in no occupation save that of house-wife, except in a few cases where she has special employment at home. The children not compelled to be bread-winners, but found in school; the family living in a well-kept home.

"*Grade 2.* The respectable working-class; in comfortable circumstances, with a good home, and having steady remunerative work. The younger children in school.

"*Grade 3.* The poor; persons not earning enough to keep them at all times above want;" not strictly honest, as a class, nor strictly moral. "Including the very poor, and the poor.

"*Grade 4.* The lowest class of criminals, prostitutes and loafers; the 'submerged tenth.'"

I have no means of estimating the size of these four classes, but I should judge that the first grade is the smallest, the fourth next, the second and third about equal and embracing the bulk of the population. The upper class, without doubt, is smaller in proportion to the population than it is in Washington or Philadelphia, and probably several other cities, and it represents less wealth, but in point of education and general culture I imagine it would compare favorably. I think, too, that its realization of its responsibilities to the lower classes is stronger than among the upper class in Philadelphia. This impression is drawn from conversations with teachers, clergymen, doctors, lawyers, and political leaders, who with one exception were found to be interested in the progress of the Negroes as a race and to have well-defined theories of the reasons for their present condition and the ways in which they should be helped. The one exception refuses to admit the existence of a "race" problem and prefers to regard the Negroes as individuals having equal chances with white men of achieving individual economic salvation. One evidence of this philanthropic attitude on the part of the more favored class is found in the attempts that they are making to care for the dependent classes of their race. The small number of only partially successful attempts in this direction does not nearly represent the spirit that prompts them. There is also, as has been mentioned, a tendency to encourage by patronage the business enterprises undertaken by Negroes. And finally, but of first importance, these educated Negroes are the teachers of their people; the masses look to them for all their instruction, intellectual and moral.

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[1] Du Bois, pp. 310–311.

The recreations and amusements vary in the four classes of society. For the lowest classes there are only the saloons, gambling-dens, houses of ill-fame, low dance-halls, and the streets. The upper class has its social and literary clubs, church entertainments, and pleasant homes. For the mass of the people there are steamboat excursions, barbecues, cake-walks, picnics, balls, and church "sociables," all of them ranging from respectable, well-conducted functions down to orgies of vice and sensuality. I think that it is only in the very lowest sort of amusements that there is any contact with the whites. A Negro is rarely seen at a theatre, or even at any of the summer gardens, which are resorts unrivalled in popularity among all classes of white society.

The state of morality is something that is hard to get at. As is the case everywhere among the Negroes, gambling and sexual lapses are their greatest failings. There is probably not much drunkenness, though too much of their money goes for beer, but the harm done by this is rather economic than physical or moral. The general impression seems to be that the state of morality is improving. It is at any rate true that there are now circles of society where ideals are high and practices pure.

In considering the attitude of the white people of the city towards the Negro we must divide them into three classes. First, there are the well-to-do native Americans, descendants of the early French colonists and later settlers from all over the South and East. These in general preserve a paternal attitude of friendliness and good-will, howbeit somewhat passive. They would be glad to give employment to competent Negroes if public opinion allowed; they evince interest in any efforts of the Negroes towards self-betterment, and sometimes go so far as to help along by contributions of money; and by caring for individual cases they bear the burden of a large proportion of Negro poverty. Next come the foreigners, chiefly German and Irish, who are actively opposed to the Negro in economic relations and inclined to let him alone otherwise. It is not, I think, that they feel the "color line" themselves, but they seize on that pretext for lowering competition and keeping the labor-market under their own control. Socially they live apart, from the rest of the white population as well as from the Negroes. The third class is composed of what the Negroes call the "poor whites," and it is here that we find the strongest feeling against the Negroes. In spite of the fact that these two classes often live in the same quarters, perhaps because of it, they have a distinctly hostile attitude towards each other; it is a hostility that is comparatively impotent, except where it helps to keep the Negroes out of the trades-unions.

The attitude of all classes of the white people, therefore, operates to restrict the Negro to certain classes of work and to make him socially independent. The races come in contact on the street, in the street-cars, and in the relation of employer to employee, but in school, church, and amusements they are quite distinct.

Cases of intermarriage are rare. I noticed only two instances in the papers in four months, and any others would almost certainly have been commented upon. In both these cases a white woman was married to a Negro younger than herself. In both cases, too, a license was refused on some pretext by at least one license clerk. The amount of illicit connection, of course, cannot be estimated, but the number of legal unions must be small. In general, public opinion is strong against race amalgamation in any form.

An instance significant of the attitude of the Negroes of St. Louis towards race matters is at hand in the resolutions adopted at a mass meeting held early in the summer of 1901. These resolutions asked the directors of the Louisiana Purchase Exposition to establish a Negro Department, with a view to exhibiting in a separate building "evidences of Negro brain, skill and enterprise."

Political Life.

An interesting revolution has been going on in the political life of the Negroes of St. Louis. In the early seventies the one Negro who voted the Democratic ticket was arraigned by the congregation of the church to which he belonged on the charge of being "a Democrat and a traitor to his race." At the last municipal election, April 2, 1901, it was estimated that three-fourths of the Negroes voted the straight Democratic ticket. In the sixth precinct of ward 15, with a Negro registration of 228 out of 286, there was a Democratic majority of 63.[1] This revolution has been going on gradually since 1885, but it is only in the last three elections that there has been a Democratic Negro vote of any consideration, and so this decided going over to the Democratic side came as a surprise. The chief cause was loss of confidence in the Republican party leaders, through their failure to redeem election pledges. The defection was largely among the younger generation, who can no longer be held loyal to the Republican party by the traditions of the sixties, and who resent the assumption that their vote will go as a matter of course to the party of their fathers, without a proper recognition of their value to that party. It may well be, also, that the character of the last Republican administration in the city aroused a desire even in the Negroes to try what the Democrats would do. A certain colored political leader gave as his reason for a change of party that "the Republican leaders will give offices, when they give them at all, to low-down niggers who bring discredit on the race."

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[1] Article by G. B. Vashon in *The Republic*, August 4, 1901.

Whatever the explanation, this movement is an indication of independence of thought that is not to be despised in reckoning up the hopeful signs.

10. CONCLUSION.

The Negro problem has been so ably defined by Dr. DuBois,[1] and the duties it imposes on both races so sanely discussed, that there is little more to be said on those lines. It remains for us to see if the facts presented about St. Louis justify any inferences in regard to the working out of the problem here.

The discouraging features are sufficiently evident. There is poverty, so great and so wide-spread that it must be reckoned with in every aspect of the question; there are ignorance and inefficiency that go hand in hand with the poverty, at once reasons for it and results of it; there is an enormous waste of life and vitality, largely in consequence of the poverty and ignorance; there is an imperfectly developed moral sense and a lack of control that bear fruit in an alarming amount of crime; and there is the attitude of the white workman and workwoman which refuses to the Negro an equal industrial opportunity.

In spite of all this there are features which offer encouragement; and these, it seems to me, are that very tendency towards segregation so often deplored, and an accompanying development towards self-sufficiency. I can see no indications in St. Louis that the white population will at any time in the near future admit the Negroes to an economic or social equality. Everything points in the contrary direction. The Negroes are withdrawing more and more into separate localities; their religious life and their education have always been entirely apart from their white fellow-citizens; they have no desire to mingle with them socially. This tendency towards segregation would be far from encouraging if there were not at the same time evidences of the germs of self-efficiency in the Negro population. These evidences are to be found in the business enterprises conducted by Negroes for a Negro patronage, in the attempts made by the Negroes to care for their dependent classes, and in the attitude of the educated Negroes towards the problems of their race. It seems to me that there is ground here for hoping that in the course of time the Negroes will provide for themselves the industrial opportunities they are now clamoring for. In the face of the organization of capital that is going forward at such rapid strides this may seem impossible. But it rests with the Negroes themselves to eliminate the competition of large establishments by withdrawing their patronage from them and transferring it to small enterprises conducted by their own people. The disposition to do this is evidenced by the success of a certain number of small businesses. The only reason I can see for fearing the state of things which, perhaps with insufficient reason, I argue from present indications would be the danger that this social and economic solidarity might mean also a political solidarity. The independence of thought recently mainifested by the younger generation, however, would seem to point in the opposite direction.

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[1] The Philadelphia Negro, ch. xviii.

It will always be a mooted question, I suppose, this of the value to its recipient of a civilization imposed by an external agency. I am inclined to feel that a slight degree of that desirable quality achieved by the travail of a people or an individual is worth more, certainly to the subject, and probably to the world, than a far greater amount forced upon him. And so, in the case of the Negro, it is what he does for himself and by his own efforts, in the face of opposition, that will win for him salvation.

REVIEWS AND MISCELLANY.

NOTES ON RECENT PROGRESS IN VITAL STATISTICS IN THE UNITED STATES.

The neglected condition of vital statistics has long been a reproach to Americans, so that it is extremely gratifying to note the beginnings of satisfactory coöperation between the national, state, and municipal officers concerned in the collection and publication of such data. For the first time in the history of the country there is prospect of continuous, systematic improvement, through the aid of the now permanently organized Census Office, and the American Statistical Association is to be congratulated upon its agency in establishing this valuable aid to progress.

At the present time workers in vital statistics are largely concerned with the questions of organization, methods of collecting data, and presentation of the resulting statistics. Studies of results will come later, but at present very much remains to be done to make vital data truly comparable. A fundamental necessity in mortality statistics is the adoption of a uniform classification of causes of death, and the movement in this direction by American registrars has met with a very high degree of success.

Conference of State and Provincial Boards of Health.

With these preliminary remarks, I may be pardoned for presenting, in brief abstract, a paper read by me before the recent Conference of State and Provincial Boards of Health of North America at New Haven, October 28–29, 1902. It is given in order to mark the progress already made and to indicate some directions in which further advancement would seem advisable.

Progress of the Movement for Uniform Statistics of Causes of Death.

Historical note: First effective effort for uniformity in this country by Conference in 1898. Action of American Public Health Association. Acceptance of methods of revision of Bertillon system by

International Statistical Institute and European registrars. Resulting INTERNATIONAL CLASSIFICATION, the only practicable means of securing uniformity. Its generally adoption by *all* registration States, important cities, the United States Census, the United States Department of Labor, etc. Desirability of stricter conformity by municipal registration offices. Use of Manual published by the United States Census Office. The millenium has not yet arrived, and much work remains to be done before the fullest degree of uniformity and comparability is attained. No backward step should be taken. The acceptance of the International classification and its practical use, as fully in agreement with its present requirements as possible, indispensable to further progress. Unsatisfactory features should be noted and sentiment directed for their amendment at the next decennial revision. Attention should be given to the preparation of definite methods of treating several causes of death when returned on a single certificate. Variations in the significance of returns in different parts of the country should be studied. Forms of tabulation of mortality statistics should be studied, and the most essential data to be given in registration reports and bulletins, whether national, state or municipal, should be determined. A committee of the Conference would be desirable to coöperate with the committee of the American Public Health Association, American Medical Association, the goverment departments, etc., for the attainment of these objects. The aid of the entire medical profession should be enlisted, as far as possible, to improve the statement of causes of death and to determine how mortality statistics may be made of the greatest practical use to the profession, especially to those engaged in public health work, and hence to the people of the country.

Discussion at the conference referred to was general and the following resolution was finally unanimously adopted: —

Resolved, That a Committee be appointed by the Conference of State and Provincial Boards of Health of North America to coöperate with the United States Census and with similar committees from the American Public Health Association, American Medical Association, and other organizations, in the promotion of the uniformity and comparability of mortality and other vital statistics, and their satisfactory presentation in statistical reports and bulletins.

Under this resolution, the President of the Conference, Dr. H. M. Bracken of Minnesota, appointed the following committee: Dr. Irving A. Watson, secretary of the New Hampshire State Board of

Health, *chairman;* Dr. Charles A. Lindsley, secretary of the Connecticut State Board of Health; Dr. Peter H. Bryce, secretary of the Ontario Provincial Board of Health and deputy registrar-general. The United States Census Office has already begun the collection of certain data for use in coöperation with this Committee, and the Committee on Demography of the American Public Health Association was duly authorized at its recent session at New Orleans, as indicated by resolutions given below, to coöperate as indicated. Undoubtedly the American Medical Association will likewise join in the work, and it would be very desirable that the American Statistical Association should appoint a committee for this purpose.

Conference of the Sanitary Officers of New York.

Immediately after the Conference of State and Provincial Boards of Health at New Haven occurred the Second Annual Conference of sanitary officers of New York called at the Assembly Chamber at Albany by the State Commissioner of Health, Dr. Daniel Lewis of New York City. An interesting paper on "Vital Statistics" was read by Dr. Guilfoy of New York, which, together with the discussion by Dr. O'Leary, is given below in substance. It should be remembered, in reading this paper and discussion, that while the New York State Health Department under Dr. Lewis has heartily joined with the other registration states of the country in the indorsement of the international classification, thus making the list of registration states absolutely complete, the central office in New York, as in other states, has no direct control over methods of compilation employed in individual cities for local purposes. It would be very desirable that *all* cities should join in the use of a uniform classification, as all registration states have already done, but with the characteristic independence and individuality of American registrars, it is not likely that this desirable end will be accomplished at once. One by one, however, the cities that retain their peculiar methods will recognize that agreement for the sake of comparable statistics is of much greater importance than insistence upon even possibly superior methods, and we shall have complete harmony and universal coöperation.

Vital Statistics.

Paper read at the Second Annual Conference of sanitary officers of New York, Albany, October 30–31, 1902, by Dr. William H.

Guilfoy, registrar of vital statistics, New York City (published by permission of New York State Health Department.): —

To set before you gentlemen, a dish composed of a conglomeration of death, birth and marriage rates, seasoned with sprinklings of age distribution, sex, and occupation influences, served with sauce *à la* United States Census, is far from my purpose. The thought that a few words of mine might aid in the adoption by this representative gathering of the International or Bertillon system of classification of causes of death, impelled me to forego the pleasure of browsing in the broad field of vital statistics and to turn my efforts in the direction of an appeal for the adoption of that system.

As you all know, this system, as agreed upon by the representatives of European and American officials in the Congress assembled at Paris, in August, 1900, went into effect in the countries represented on January 1, 1901, the beginning of the century. The classification is one that, to my mind, represents the product of the energy, talents, and indefatigable exertions of most of the best minds in this line; years of hard work finally rounded out and presented it to the registrars and health officers of the world for their adoption as one that, although it possessed some faults, whose merits were so many and so prominent, and its application so easy, that it would be quickly seized upon as an improvement upon its predecessors and adopted by all the countries, states, and cities laying claim to the possession of a board of health, a health officer, or a registrar.

The intrinsic value of this as compared with other classifications is: —

1. Its exactness. Each cause of death includes under it every disease which should be included, and excludes those which should be excluded. This definite and positive amalgamation and segregation places the registrar in such a position that he feels no hesitancy in classifying under their proper headings the numerous causes of death reported to him; if a certificate of death be presented to him upon which the cause is stated to be any one of the following: enteric fever, typhus abdominalis, continued fever, ataxic fever, he classifies it under title 1, typhoid fever: if any of the following be reported as a cause of death, diphtheritic angina, pseudo-membranous angina, infectious, malignant or toxic angina, pseudo-membranous laryngitis, malignant laryngitis, pseudo-membranous bronchitis or diphtheritic paralysis (he excludes from this title, stridulous croup and spasmodic

or false croup), he places them under title No. 9, diphtheria and croup; so it goes on through its 179 titles.

2. Its comparability. The classification is as exact as it can possibly be made and reflects an up-to-date recognition of medical and surgical progress. It renders the causes of death closely comparable with those of other countries, states, and cities in which this classification is in use. This is considered by some, and justly so, as its greatest merit. Is there any one present who would be bold enough to deny that a uniform comparison of the vital statistical reports of the cities and of this state, one with the other, is not a consummation devoutly to be wished?

Look at the monthly reports of some of the cities of the state. In one of the largest cities of the state the classification is based on neither an anatomical, etiological or diathetic basis, but simply on the school-boy plan of naming the diseases in an alphabetical order; in another, a smaller one, the same holds true. It is undoubtedly a labor-saving task for the registrar and the printer, but it is not scientific; it reflects not the spirit of research which pervades the age; it savors of the days of "humours."

Another of the large cities possesses a classification which is superior to the ones just mentioned inasmuch as it is based upon a combined etiological and anatomical foundation, though it is puzzling to find that it includes colic and gastric catarrh under the zymotic diseases; duodenal ulcer and thrombosis among the constitutional diseases; pulmonary embolism among the tubercular; abscess and spinal concussion among the nervous; influenza and acute rheumatic fever among the respiratory; cerebral hemorrhage and tetanus among the digestive, and, horrors upon horrors! locomotor ataxia, uterine fibroids, diabetes mellitus and mitral insufficiency among the urinary. Is there not pressing need of reform in this classification? Another of the large cities possesses a fairly good classification, but one with which faults may be found in placing some diseases under a heading which latter-day medicine would remove and place in a more appropriate class.

This system was adopted by the Department of Health of our city, and went into effect upon January 1, 1901. The system it superseded was that known as the Registrar-General's classification, and we found that the Bertillon was such a thorough one that it was an easy task to put it into practical working; it rendered comparable the figures of past years with those of the present, with a few exceptions. Within the past few years the question has arisen as to the increase of cancer since 1880, and the statisticians have debated among themselves as to whether this increase was a real one or a statistical one; the gross figures showing an immense increase, in some cities the figures being trebled; naturally the cause was sought for; the influence of medical and surgical progress would seem to account partly for the increase, especially the operation of laparotomy; another cause was probably due to more careful certification as to the cause of death; the question then revolves around the seat of the cancer. Was the increase in the accessible cancers or vice versa? Some few of the cities and states of continental Europe were in a position to furnish death rates of cancers of the face, tongue, mouth, breast and uterus, on the one hand, and of the liver, stomach, kidney and bladder, on the other hand; the death rates of the accessible cancers had not increased; some had diminished. The rates of the inaccessible ones had all increased. The figures produced served to throw considerable light upon the question. The Bertillon classification specifies the seat of all cancers. I simply mention this as an argument in favor of this system. Why should not the causes of death of the city of Buffalo be immediately and strictly comparable with those of Rochester, Syracuse or Auburn? Is there any good reason why New York City should possess a different classification from that of its sister cities? The Bertillon classification points out a path for us to follow. It provides for local titles and sub-titles where necessity arises; it provides for a decennial revision, that the present seven-league strides of progressive advancement in medical and surgical knowledge renders imperative. Are we to set at naught the resolutions, the recommendations and labors of such a representative body as the American Public Health Association? The work of the Public Health and Marine-Hospital Service in this direction should be encouraged. Is the greatest country of the world to continue to be a subject of statistical reproach among the vital statisticians of the world? And is the greatest state of the greatest country to take no steps to place itself in touch with the efforts being made by states, cities, and individuals for the obliteration of this undoubtedly deserved slur? Perish the thought!

Bertillon System.

(Discussion of Dr. Guilfoy's paper by Dr. A. J. O'Leary, Registrar of Borough of the Bronx.)

The value of the science of statistics cannot be overestimated as it lies at the root of history, for, had the statistics of the Roman Empire been kept, we should now possess more than half the historic records of those interesting times. It is only since a due estimate was set upon the statistical returns of the leading cities of the world that the progress of sanitary science has been marvelous and substantial. To prove that a suggested remedy for municipal hygienic short-comings was productive of results, there is but one way and that is by the inexorable law of figures. London, Paris, Edinburgh and Berlin together with our own teeming centers of population, such as New York, Chicago, and Philadelphia would not now exhibit a per cent of the mortality so vastly encouraging were it not that statistics proved the invaluable character and efficiency of public sanitation. An adequate supply of pure water, the proper ventilation of dwelling houses, an abundance of fresh air, made possible by the provision of public parks, happily termed "breathing places," have mainly combined to those happy results, and statistics have demonstrated this truth. But in order that the science of statistics should accomplish all that falls within its purview, it should be cultivated and carried out in accordance with the best and most reliable methods. Now it is a universally admitted fact that the best results are obtained in all branches of science where there is a uniformity in methods of research. And this applies particularly to the science of statistics, for it seems that where a system of classification can be found that embodies all that we wish, it is our duty, in the interest of the common good, to adopt it. The consensus of opinion among statistical experts the world over endorses the Bertillon system of classification of diseases as incomparably superior to all others. It is simple, an advantage of inestimable benefit; it is reliable; and it is eminently scientific, based upon the accepted data of pathology and etiology of disease.

Its principles are fixed and uniform and are not subject to the arbitrary ideas of innovators. In the light it sheds upon every phase of disease and upon the influences that promote or hold it in check, it enables our municipal authorities to deal with the great problems affecting the physical welfare of the community intelligently and effectively. The leading cities of Europe have cordially endorsed it by adopting it, and our American authorities gladly welcome the statistical tables of those great municipalities because they are replete with valuable and practical information. We there read the fluctuating record of human life as influenced by modern science in opposition to the ignorance and folly of ages gone by. Unfortunately our own country has been slow in realizing the immeasurable superiority of the system over the crude and antiquated systems that have proved so barren of results. In Greater New York the Bertillon system of disease classification has been adopted, and consequently we are in a fit condition to appreciate its advantages. I have pointed out in a few words the superiority of the Bertillon system over all others; but my main purpose in appearing before you is to show that its adoption will effectually put an end to the confusion, trouble and delay that now so annoyingly spring from the effort to reduce to order and give some homogeneity to the slipshod methods of keeping vital statistics as found in some towns and villages of the state. The plea, therefore, that all of the cities, towns, and villages of the Empire State should adopt the Bertillon system of classification is eminently rational and fully in line with the progress of our times. No one who at all appreciates the value of statistical data as applied to modern medical science will hesitate to concede that its value in the all important branch of vital statistics should be adopted and enforced with the sanction and authority of the state legislature.

It was a pleasure to learn, while at Albany, that the new "standard form" of certificate of death prepared by a committe of the American Public Health Association in conjunction with the U. S. Census Office (See Census Circular, No. 71) had given excellent satisfaction in practical use in New York. It is used also in Michigan, Indiana, Colorado, District of Columbia, Illinois (Dr. Egan), and has recently been adopted for Vermont by a law just passed by the legislature of that state. The New York office has also prepared a new form of certificate of birth upon similar lines which is of interest. After the registration of deaths is brought into a satisfactory condition, we shall have room for all of our efforts in placing the important matter of birth registration upon a proper basis.

Meeting of the American Public Health Association at New Orleans.

Important action relating to vital statistics was taken at the meeting of the American Public Health Association at New Orleans on December 8 to 12, 1902. General resolutions were adopted relating to the previous action of the Association in 1898, and congratulating the agencies, national, state, and municipal, that have caused the recommendations then made to be so effectually carried out. After reviewing and reaffirming the past action of the Association, its committee on demography was then fully authorized to coöperate with other associations and with the departments of the government concerned with vital statistics in the extension of proper registration methods, the selection of improved ways for the presentation of data, and the promotion of the general use of the international classification, together with the preliminary measures for its regular revision.

Following are the resolutions referred to in full: —

Whereas, The American Public Health Association at its meeting at Ottawa, September 27 to 30, 1898, unanimously passed the following resolutions:

Resolved, That the American Public Health Association recommends that the Bertillon classification of causes of death be adopted by all the registrars of vital statistics in the United States, Canada, and Mexico as soon as the change from the systems now in use can be conveniently made;

Resolved, That a proposal be made for an international alliance between the registrars of the three countries included in this Association, and the registrars of France and other countries now using, or which shall hereafter adopt, the Bertillon system, and that definite plans for such an alliance shall be submitted for action to the next annual meeting of this Association;

Resolved, That the governments of the United States, Canada, and Mexico be likewise requested to make this classification the basis of the mortality statistics of the censuses of 1900 and 1901; and

Whereas, The action recommended by this Association in the above resolutions has been generally accepted and, as far as possible, thoroughly carried out; therefore be it

Resolved, That the American Public Health Association heartily congratulates the registration offices of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Maryland, Pennsylvania, District of Columbia, Michigan, Indiana, Illinois, Wisconsin, Minnesota, and other states, including all of the registration states of the Union, the Provinces of Ontario and Quebec, and the Superior Board of Health and States of Mexico, and also the municipal registration offices, upon their adoption of the uniform classification thus recommended, which, since its revision at Paris, in 1900, is known as the International Classification;

Resolved, That cordial acknowledgement be extended to the International Statistical Institute for its action at Christiana in 1899 in support of the plan of revision proposed by this Association; to the French government for its services in convoking the International Commission of Revision at Paris, in 1900; and that the earnest coöperation of the American Public Health Association be pledged to the representatives of the twenty-six countries there assembled in securing adherence to the principles of a uniform and comparable international classification of causes of death;

Resolved, That the thanks of the American Public Health Association are due to the United States Public Health and Marine-Hospital Service for promptly publishing and distributing among American registrars the first translation into English of the International Classification of 1900;

Resolved, that the thanks of the American Public Health Association be especially extended to the census offices of Canada, Mexico, and the United States for their prompt adoption of the International Classification, and to the United States Census Office in particular for preparing and furnishing to the registrars of that country its recently published "Manual of International Classification of Causes of Death," whose general use, as a most convenient and accessible practical basis of uniformity, is recommended to all English-speaking registration offices embraced in this Association;

Resolved, That the efforts of the Committee on Demography and Statistics of this Association in conjunction with the United States Census Office to secure the extension of the registration area by the enactment of suitable laws and the use of a standard form of certificate of death, as shown in Census Circular No. 71, be heartily commended, and that the Committee be further authorized and directed to coöperate with the Census Office, the United States Public Health and Marine-Hospital Service and other departments of the Federal Government interested in vital statistics, and with similar committees from other associations in the work of promoting the adoption of suitable registration laws and the extension of the registration area, the proper compilation and presentation of vital statistics by states and cities in weekly or monthly bulletins and annual reports, and also in further work relating to the extension and practical use of the International Classification of causes of death, the disposition of jointly returned causes and all preliminary work relating to the next decennial revision;

Resolved, That all registration offices in the countries included in this Association that have not already adopted the International

Classification be urged to do so, on the ground that the advantages of general uniformity should outweigh any local preference.

Assurance of active coöperation of the government with the committees is given by the appointment of Mr. William A. King, Chief Statistician of the U. S. Census for Vital Statistics, as Chairman of the American Public Health Association's Committee on "Demography and Statistics in their Sanitary Relations," while Dr. Walter Wyman, Surgeon-General of the U. S. Public Health and Marine-Hospital Service, was elected President of the Association for the ensuing year.

I had intended to make some reference to the very important practical subject of treatment of jointly returned causes of death,— one of the difficulties that must be met in some way in a registration office, and to which one of the resolutions refers. It may be better, however, to reserve this subject for a special paper, which I shall, accordingly, endeavor to present to the American Statistical Association at an early date.

CRESSY L. WILBUR.

STATISTICS OF SMALL-POX AND VACCINATION.

The *Hygienische Rundschau* for January contains a very thorough study of a small epidemic of small-pox in the province of Cagliari, in Sardinia, by Sanfelice and Malato. The disease, entirely absent from 1891 to 1897, was introduced from Tunis in the latter year and increased to a monthly maximum of 34 cases in January, 1898. In February and March the cases fell to 5 and 7, and popular alarm was allayed before thorough vaccination had been accomplished. The disease persisted through the spring and broke out again with new force, causing 32 cases in August and 29 in September. In October the authorities were at last aroused to action and vaccination was made compulsory. While some 14,000 persons were vaccinated between December, 1897, and December, 1898, there were 25.000 vaccinations from December, 1898, to February, 1899. As a result the number of new cases fell from 20 in October, 22 in November, and 17 in December, to 3 in January, and 2 in February, after which the epidemic ceased. The authors, including as unvaccinated all cases of unsuccessful vaccination and all cases in which vaccination was accomplished only a few days before the development of the small-pox symptoms, calculate that the ratio of cases to deaths among the unvaccinated varied from 3.47 to 5.75 in the different age classes, while for the vaccinated the figures were between 16.59 and 20.16.

Dr. L. C. Pakes, on "The Prevention of Small-pox" in *Public Health* for December, 1902, reviews the epidemic that visited London in 1901–02. During the year preceding September 27, 1902, there were 9171 cases notified in the metropolis with 1505 deaths "giving a case rate of 20 per 10,000 of the population, a death rate of .33 per 1000, and a fatality of 16.4 per cent of the notified cases." Dr. Pakes adds tables showing the quarterly prevalence of small-pox since 1856 and the distribution of the present outbreak by boroughs; but no figures are given as to vaccination.

The Journal of State Medicine for January contains two rather apologetic accounts of the famous "Leicester" experiment by two town officials, the chairman of the Public Health Committee and the medical officer of health. Leicester is a stronghold of English anti-vaccinationists, and after 1886 the yearly total of vaccinations never rose above 500 and finally fell to less than 2 per cent of the births. In 1892 there occurred 38 cases; in 1893, 308; in 1894, 8; in 1895, 4; and in 1901, 4 cases without any such general spread of the disease as had been predicted. This result has been accomplished by vigilant supervision on the part of the authorities, by prompt reporting of cases and immediate isolation of patients and their families. As Dr. Millard, the medical officer of health, explains it, "a handful of the population, including the medical men, sanitary staff, small-pox nurses, etc., are as well vaccinated in Leicester as in any other town, so that a cordon of protected persons can at once be drawn round any case of small-pox which may occur." It is interesting to note that an experiment of this sort can be successfully carried on for a period of fifteen years in a large English municipality; but this result of good luck, combined with extraordinary vigilance in a single town, can scarcely outweigh the experience of a century in the whole of Europe.

Dr. Arthur Newsholme in the *British Medical Journal* for July 5, 1902, discusses "The Epidemiology of Small-pox in the Nineteenth Century" and gives most instructive diagrams of small-pox mortality in London, Glasgow, Hamburg, Stockholm, Prague, Florence, Christiania, Montreal, Chicago, Paris, Copenhagen, Mexico, and Rio de Janerio. It seems impossible that the most skeptical can look at the London table covering the period from 1650 to the present day without being convinced that some new force suddenly appeared about 1800 to control the ravage of this disease. The contrast between the death rate since 1872 in Hamburg and Stockholm, on the one hand, and Prague on the other, is also striking. Dr. Newsholme devotes himself mainly to a consideration of the periodicity of the disease, and, while it is apparent that minor epidemics recur at short intervals of three or four years, he concludes that there is no evidence of the existence of a definite cycle of greater epidemics separated by longer periods. The recurrence of minor epidemics is explicable as the result of an accumulation of susceptible individuals, but, according to Dr. Newsholme, "there is some further factor responsible for the causation of the greater epidemics and pandemics." He finds the attempts to show some relation between these exceptional outbreaks and meteorological conditions to be inconclusive; and leaves the matter in doubt. From a bacteriological standpoint the development of a race of germs of unusual virulence would serve to account for such phenomena.

The *Journal of the Institute of Actuaries* for October, 1902, contains an able review of small-pox statistics, by A. F. Burridge, under the title, "Vaccination and the Act of 1898." Mr. Burridge begins with a concise history of inoculation and vaccination and a digest of English and colonial laws on the subject. The course of the disease in London is then indicated by a diagram showing the ratio of small-pox deaths to deaths by all causes since 1700. The general increase of small-pox during the eighteenth century and its sharp decrease between 1800 and 1830 are very clear. The low level since maintained has been broken only by the epidemic of 1870, and even that is insignificant, beside those which occurred every three or four years in the previous century. No less striking are the succeeding curves which show the small-pox mortality in various countries from 1850 to 1900. Since the pandemic of 1871–74 the small-pox in England, Scotland, Sweden, and Prussia, where vaccination is compulsory, has been inappreciable; in Austria and Belgium, on the other hand, vaccination is not compulsory and the amount of small-pox, considerable. Next, Mr. Burridge considers the effect of vaccination upon age incidence, and shows that the decrease of small-pox has affected mainly the earlier periods of life, a gradual weakening of the effect of infant vaccination causing the curve of small-pox at ages above 45 to show no marked decline since 1850. Comparison with curves for the other zymotic diseases of childhood shows that measles and diphtheria exhibit no decrease like that shown by small-spox, indicating that the improvement cannot be attributed to general sanitary conditions. After these general considerations, Mr. Burridge considers the epidemic of 1887–88, at Sheffield, in some detail. Here a fairly thorough census of the borough was made to determine the vaccinated and unvaccinated population. As this census was not undertaken until the epidemic had been for some time under way, many persons were returned as "vaccinated" who had been vaccinated during its course and thus the number of unvaccinated apparently exposed to risk was unduly small. A thorough examination of selected localities gave a correction of + 38.6 per cent to be applied to the "unvaccinated" population, and even after this had been made the death rate per 100,000 was 3478.7 in the unvaccinated against 75.1 in the vaccinated class. The necessity for such a large correction throws some doubt on these figures. After brief reference to certain hospital statistics, showing a ratio of deaths to cases four or five times as great among the unvaccinated as among the vaccinated, the experiences of the French, Prussian, and Austrian armies is considered. In the Prussian army general vaccination on entering the service has been enforced since 1834; in the French army, although repeatedly ordered, it has only been thoroughly carried out since 1888; and in the Austrian army no vaccination was necessary prior to 1886. The following figures are typical of the rest: —

ATTACKS PER 100,000 MEAN STRENGTH.

	1875–85.	*1886–96.*
Prussian army	4.7	3.2
French army	133.6	32.6
Austrian Army	333.7	35.8

In conclusion, Mr. Burridge quotes the experience of Prussia with compulsory revaccination: "Since 1885 not one person in 100,000, and since 1894 not one in 1,000,000 has died of small-pox."

A Concise History of Small-pox and Vaccination in Europe, by Edward J. Edwardes, M.D. (H. K. Lewis, 136 Gower Street, London, W. C., 1902), is an admirable compendium of the most important statistical material relating to the subject; and the author's method of handling his figures is marked by ability and fairness. The little book, of only 142 pages, begins with a historical résumé containing many interesting quotations from early writers, and then proceeds to exhibit the condition of affairs during the eighteenth century. In general, it appears that small-pox then caused in Europe something like one-twelfth of the deaths from all causes, and from 2000 to 4000 per million living population. After the introduction of vaccination, by Jenner, in 1801, a rapid decrease took place. Thus, in Sweden, the small-pox death rate per million was 1914 for the decade, 1792–1801, 623 for 1802–11, and 133 for 1812–21. The same effect was apparent in England, Germany, and Denmark; and these abrupt changes on the discovery of the new process form the first class of facts which prove the efficacy of vaccination. The second sort of evidence is that furnished by the experience, at the same period, of different countries having a varying amount of vaccination. Thus, in the great epidemic of 1870–75, four countries with compulsory vaccination had small-pox death rates as follows: England, 361; Scotland, 314; Bavaria, 346; Sweden, 333. Of countries without compulsory vaccination, on the other hand, during the same period, Prussia had a death rate of 953, Austria of 1360, Belgium of 1293, and the Netherlands of 958. In 1874 vaccination and revaccination were made compulsory in the German Empire; and since 1886, when statistics began to be available, the death rate has ranged from 4.2 to .1 per million. The third great class of facts in support of the efficacy of vaccination includes the statistics as to the prevalence of small-pox among the vaccinated and unvaccinated in the same community. For instance, at Chemnitz, in 1870–71, a special census was made to determine the condition of the general population; the attack rate among the protected was 1.6 per cent, and among the unprotected, 46.3 per cent. Dr. Edwardes quotes also the statistics for Gloucester, and a number of other English cities, but to the most interesting method of analysis, from a statistical standpoint, he only refers in his preface. This is the device suggested by Körösi, who found that out of 14,678 persons dying from various causes in certain Hungarian hospitals in 1886, the unvaccinated constituted 14 per cent of those who died from other diseases than small-pox and 81 per cent of those who died from small pox. This is extremely important because it answers the objection, made to such figures as those quoted for Chemnitz and Gloucester, that the unvaccinated represent a specially feeble class of the community or a class exposed to specially unsanitary conditions. The fourth sort of evidence derived from a comparison of the ratio of deaths to cases among the vaccinated and the unvaccinated is not given much space by Dr. Edwardes; but the statistics for Leipsic show a fatality, under 15 years, of 3 per cent among the vaccinated, and 35 per cent among the unvaccinated,— over 15 years, of 9 per cent among the vaccinated, and 44 per cent among the unvaccinated. Altogether the statistical evidence of the protective effect of vaccination is absolutely conclusive; and it has never been better presented than in this little book.

C.-E. A. WINSLOW.

RECENT SANITARY REPORTS.

European Statistics for 1899.

The *Achtzehnter Jahresbericht über die Fortschritte und Leistungen auf dem Gebiete der Hygiene* for 1900 contains, as usual, a summary of vital statistics and, in particular, of German statistics, by Dr. Heimann of Berlin. The comparison of statistics collected in different countries is liable to serious errors, but may often be suggestive and interesting. In excess of births over deaths the Netherlands led the countries tabulated in 1899 with a birth rate of 32.0 and a death rate of 17.1 per 1000; for the German Empire the figures are given as 35.9 and 21.5; for Great Britain, 29.4 and 18.4; and for France, 21.2 and 21.1. It is somewhat surprising that 285 German cities of over 15,000 inhabitants, with a total population of 15,857,035, or 28 per cent of the total for the empire, should have a birth rate of only 34.8 and a death rate of only 21.0, both figures being lower than those for the country as a whole. In the table of Swiss statistics the typhoid death rate of 8 per 100,000 in 1896–98 is a reproach to American communities; even in Massachusetts, the lowest rate ever reached was 19.5 in 1901. Switzerland also makes a fine showing in its municipal statistics, fifteen large cities having a death rate of only 17.6 per 1000 and only 13.4 deaths under 1 year per 100 births. For 33 English cities this last figure is 18.1, and in the German cities it ranges from 15.4 in Frankfurt a. M. to 32.0 in Chemnitz. With respect to the special infectious diseases it is interesting to note that while diphtheria and croup are somewhat more fatal than measles in the country as a whole, yet comparing the cities, only Austria, France, Belgium, and England show more deaths from the latter than from the former disease. For example, in London in 1899 the rate for measles was .62, and that for diphtheria and croup was .45; in Paris the respective figures were .36 and .13. The typhoid death rate in the French cities was very high, .36 per 1000; for English cities the figure of .22 is recorded, and for Austrian, Swiss and Dutch cities the rates are all .11. The great importance of the campaign against tuberculosis is forcibly brought out by a table which shows the deaths from all forms of this disease in the German cities to range between four and six per thousand population, rising in Nürnberg to 8.5.

French Civil and Military Statistics.

Dr. Lowenthal in the *Journal de la Société de Statistique de Paris* for May, 1902, criticizes severely the municipal statistics published by the director of public health. Their serious defect arises from the absence of proper regulations to secure registration of the causes of death and from the disinclination of physicians to aid in this work. The death rates from infectious diseases appear at first sight to be remarkably low; for example, the city of Laon with 14,242 inhabitants had in 1894 a record of 1 death from typhoid fever, 2 from diphtheria, 4 from tuberculosis, etc. When it is noticed, however, that out of a total of 404 deaths 288 are recorded as due to "unknown causes," the rarity of infectious diseases is less surprising. In Angers the deaths from "unknown causes" were 1752, the total deaths, 1900; in Poitiers the figures were 625 and 692, and so on. The principal cities of 40 departments have so large a proportion of deaths recorded as due to "unknown causes" or to "other causes" as to vitiate the value of their nosological statistics. Recently, in the *Revue d'Hygiene* for January, 1903, Dr. Lowenthal has exposed a still more insidious fallacy, this time in French military statistics. High authorities have pointed with pride to the reduction which has been going on in the army death rate; and such a reduction is certainly apparent on the face of the returns. As the author shows, however, this decreased death rate has been accompanied by a very much greater increase in the number of retirements upon half-pay. Only by a constantly accelerated elimination of invalids has the death rate in the active list been kept down. While the death rate in 1863–69 was 9.0, and in 1893–1900 only 5.6, the rate of retirement in the first period was 7.0, and in the second, 24.0. The morbidity rate has more or less steadily increased. The same phenomena appear from a study of the individual diseases; for example, while the death rate from tuberculosis is less than two-thirds of what it was thirty years ago, the morbidity rate has increased by about 750 per cent. The special factors in this great sick rate are shown by table of deaths from various diseases whence it appears that typhoid fever is the cause of 236 deaths out of every thousand, tuberculosis of 155, influenza of 82, etc., three-quarters of the deaths being due to zymotic diseases; and the principal cause for the increasing morbidity, according to Dr. Lowenthal, is the lack of a proper physical standard in the selection of recruits.

Maine Board of Health for 1900.

The *Ninth Annual Report upon the Births, Marriages, Divorces, and Deaths in the State of Maine* for 1900 is notable for the adoption of the Bertillon system of nomenclature for recording the causes of death. The advantages from the increasing use of this system are already becoming apparent in the facility with which various reports may be compared. Its main defect, an illogical grouping of the individual diseases under fourteen general heads, is also made clear in this report, where Table 30 gives the deaths by "classes," class totals which combine on the one hand, small-pox and rheumatism; on the other, tetanus and chorea, being, of course, quite meaningless. The statistics of special diseases published by Dr. Young are of unusual value. For each of the more important causes the deaths are tabulated by months, by countries, and by age periods, compared in many cases with the averages for the preceding years; the death rates in the cities are also given separately. As regards more general statistics the report shows the birth rate, 20.30, and the death rate, 16.40, to be about the normal for recent years. The proportion of native-born children is high, the percentage of births in families in which both parents are American being 59.94 for the State and 39.55 for the cities. The figures for the children born of two foreign parents are, respectively, 21.57 and 38.68, the number of births from mixed marriages being in each case smaller. The death rates given in this report are, as above stated, very complete. The rates by age periods falling from 16.31 per cent under 1 year, to 2.21 per cent between 5 and 10 years, rising to 6.97 per cent between 20 and 30, falling between 30 and 40, and slowly rising to 16.27 per cent between 70 and 80, show clearly three of Pearson's periods of maximum mortality. Of the infectious diseases, influenza shows the high death rate of 3.40 per 10,000, and whooping-cough the considerable rate of 1.42, while the rate for diphtheria and croup is only 1.28 (2.93 in the cities). The typhoid rate is 2.43 in the villages and rural towns and 3.64 in the cities, an alarming condition. The registrar points out the incidence of this disease upon the most "active and productive age periods," 81 per cent of the deaths occurring between 10 and 50 years. Four-fifths of the cancer deaths, on the other hand, occur in the second half century of life. The death rates from infantile diarrhœa, 14.84 in the cities, and 7.37 in the villages and rural districts, are significant.

London Statistics.

Dr. Shirley Murphy, the medical officer of health to the London County Council, has recently calculated a new life table for the metropolis based upon the mortality during the last decade. From an abstract in *The Charity Organization Review* for November, 1902, it appears that, comparing this table with that calculated in 1890, the expectation of life at birth has increased for males from 39.85 to 40.98, and for females from 44.18 to 45.33. The May number of the same journal discusses the information obtained from the 1901 census with regard to overcrowding in the metropolis; and if the results are to be trusted they furnish encouraging evidence of social progress. In spite of the fact that one parish in Stepney has a population of 395 persons per acre, the general conditions appear to have improved materially since 1891. The number of persons living in "one-room tenements" has decreased by 20.9 per cent; and while the figure for "two room tenements" has remained almost stationary, the percentages for "three" and "four-room tenements" have increased 13.2 per cent and 16.7 per cent, respectively.

Providence Reports.

The reports prepared by Dr. C. V. Chapin, as superintendent of health and city registrar of Providence, R. I., should be studied by every sanitary official for their completeness, their conciseness, and thier accuracy. The *Nineteenth Annual Report of the Superintendent of Health* contains, as usual, valuable data on the incidence of the infectious diseases by months and at various age periods, with the ratio of cases occurring among persons exposed to infection at different ages. Tables of the yearly deaths from measles and whooping-cough since 1856 are of interest as showing the great irregularity in the incidence of the former disease, 97 deaths in 1900 being followed by 3 in 1901. The *Forty-sixth Annual Report upon the Births, Marriages and Deaths in the city of Providence* for 1901 supplements the report of the health board with an immense amount of valuable information. The careful analysis according to age and race is most helpful, the importance of such discrimination being manifested on the first page by the difference in general death rate between the white and colored population, 19.06 for the former, and 28.88 for the latter. Statistics of deaths by months and age periods according to nativity of parents are also of interest, although liable to error from the lack of data as to the age distribution of the respective populations. Thus the tables show the proportion of the total deaths occurring under 1 year to be larger in the children of American than of foreign parents. The death rate referred to living population at these ages would probably be higher among the foreign born. In Table VIII the ratios for the different causes of death show the same phenomenon. The ratio for diarrhœa and enteritis (2 years and over) is 16.65 for American and 41.54 for the foreign population, whereas the rates for diarrhœa and enteritis (under 2 years) are respectively, 156.53 and 151.75. Obviously the lower rate for infantile diarrhœa among the foreigners is due to a smaller proportion of children. Typhoid fever and tuberculosis are much more fatal among the foreigners; rheumatism and gout, cancer, nervous diseases and heart disease among the native born. The later tables of the individual diseases bring out some interesting points, for example, the double incidence of bronchitis — upon the first two years of life, and again, upon those over sixty years old, the number of persons dying from this disease between 5 and 40 being small. The analysis of births shows a general rate of 26.38, rising to 33.28 among the colored population; still-births are this year omitted from the birth tables in conformity with the best statistical practice. The table of births arranged by the nationality of parents is a striking study of a cosmopolitan American municipality. The percentage of births of American parentage has fallen since 1856 from 42.09 to 27.92, and the births of Irish parentage from 41.79 per cent to 10.88 per cent; since 1886 the births of Italian parentage have risen to 14.72, and those of English, French Canadian, British American, Portuguese, and Scandinavian parentage are each in excess of 2 per cent.

Boston Statistics for 1901.

The *Annual Report of the Registry Department of the city of Boston* for 1901 marks a notable increase in the publication of statistical material, showing 154 pages against 68 in the report for 1900, besides numerous new maps and tables. The statistics in the body of the report contain much valuable material but the failure to calculate ratios in most cases makes them of little general interest in their present form. The ratio between the deaths in each ward and the total deaths in the city are wholly misleading as the ward populations vary from 13,000 to 33,000. It is difficult to see why they should ever have been included. In the appendices to the report the detailed study of the movement of population in each ward, taken in connection with its topography and social conditions, is most suggestive. Three typical cases may be quoted. Ward VI in the North End represents the oldest and most thickly settled region of the city; it has 106.88 persons to the acre and 20.33 to a dwelling, and 59.47 per cent of the population is of foreign birth (Italian, Irish, Russian). The death rate for this ward is 20.27, and the birth rate 45.8; about one-quarter of the deaths occur under one year. Ward XI in the Back Bay is the newest and wealthiest section of the city. Here there are 39.67 persons to the acre and 6.66 to a dwelling, 31.60 per cent of the population being foreign born. The death rate is 15.02, and the birth rate, 12.7; only about one-tenth of the deaths occurring under one year. The relative birth and death-rates furnish a significant comment on the recent discussion inaugurated by President Eliot. Finally, Ward XXIV in Dorchester may be taken as a type of the suburban districts inhabited by the moderately well-to-do. The density of population is 8.55, the number of persons to a dwelling 6.25, the foreign-born population only 27.50 per cent of the total. The death rate is 13.44, and the birth rate 24.3, while the deaths under one amount to about one sixth of the total mortality. Following the ward statistics are tables of births and deaths for fifty years which exhibit a fall in the birth rate between 1850 and 1901 from 38.50 to 28.20 and a corresponding decrease in the death rate from 27.30 to 19.60. A historical résumé traces the growth of the city from an estimated population of 4000 in 1675, and one of 16,382 at the first census of 1742, through the various provincial and United States enumerations. Finally, a study of the composition of the foreign population as shown by the census returns emphasizes certain interesting conditions. Boston in 1900 had still the largest Irish population of any of the large cities although the percentage was only 35.6 against 45.17 in 1890. The second largest group in Boston is that from the British American provinces, amounting to 25.5 per cent of the total population; and next come the Russians, 18,850 in number, or 9.4 of the total.

Annual Report of the Michigan Board of Health.

The *Twenty-ninth Annual Report of the Secretary of the State Board of Health of Michigan* for the year ending June 30, 1901, contains, as usual, three principal sections. The first is an exhaustive review of meteorological conditions in the State, the second, a statistical study of the relation between these conditions and the prevalence of various diseases, and the third, a somewhat detailed examination of the statistics of specific communicable diseases. The general conclusions reached have been somewhat fully reviewed in these columns in connection with previous Michigan reports. It is only necessary to refer to the separation of the "cold weather" diseases, like bronchitis and pneumonia, from diarrhœa and other maladies characteristic of the summer months; and to the graphic demonstration of the effect of disinfection and isolation in the control of epidemics of diphtheria, measles, typhoid fever, etc. The work of the Michigan board has become more and more specialized in the direction of the control of the zymotic diseases by popular education and in certain directions excellent results are apparent. Thus tuberculosis of the lungs appeared on 52 per cent of the physicians' reports in 1890, and on only 25 per cent of them in 1900. The other diseases which have shown marked decrease are pneumonia, from 30 per cent to 16 per cent, "intermittent fever," from 41 to 16 per cent, and "remittent fever," from 27 to 19 per cent. Meanwhile an increase in typhoid fever is balanced by a decrease in "typho-malarial" fever. It will be noted that these figures have no direct relation to the actual amount of disease but represent only percentages of voluntary reports made by physicians. Dr. Baker's ingenuity in obtaining results from such imperfect data should inspire the state of Michigan to an extension and improvement of its system of collecting vital statistics. In 1897, indeed, a new law was enforced which raised the death rate from tuberculosis of the lungs, from 80.6 to 90.1 per 100,000! In this disease the reporting of cases is still very imperfect, the fatality rate for 1900 being 81.6.

National Sanitary Statistics.

The Public Health and Marine Hospital Service of the Treasury Department published last summer a most valuable digest entitled *Mortality Statistics of 1435 Incorporated Places in the United States* for 1901. The table is compiled from answers to a circular letter, and the total population of cities and towns replying amounted to twenty-one million. The total deaths are given in each case, with the deaths from tuberculosis, small-pox, enteric fever, measles, scarlet fever, diphtheria and whooping-cough. The general death rate is calculated, first, as referred to the census population, and second, as referred to the population estimated by the local authorities. The differences are often amusing. Huntsville, Ala., for instance, had a death rate of 7.67 on an estimated population of 15,000, rising to 14.25 on the true population, 8068. Bourbon, Ind., had a rate of 12.86 on an estimated population of 2800, and a rate of 30.33 on the enumerated population of 1187. Everett, Wash., proved to have a population of 7838 instead of 18,000, and a death rate of 20.29 instead of 8.83. For many of the communities included the total population is so small that the rates calculated are erratic; but there is an enormous amount of valuable material included in the twenty-five pages of this table. It would well repay any student of vital statistics to calculate the ratios of the deaths from tuberculosis, enteric fever, etc., to the total deaths or to the enumerated population. It seems a pity, by the way, to introduce the English term, "enteric," when the name of "typhoid fever" has become so well established in this country.

The appearance of this pamphlet suggests the hope that machinery for the proper collection and analysis of sanitary statistics from all over the country may at last be at hand. Surely the Public Health and Marine Hospital Service could perform no more important function. Here and there a state or a city publishes admirable statistics, as, for example, those of the Massachusetts State Board of Health and those of Providence, R. I. The morbidity records of Michigan mark a long step in the right direction; the ward statistics in the Boston Registration Report are most suggestive. Strenuous efforts have been made to improve the mortality returns of Indiana, which, according to the Secretary of the State Board of Health, are "now almost absolutely correct. It seems almost impossible to miss the record of a single death. Our law provides that if any human remains are burried without a permit, it will be the duty of the coroner to disinter, hold an inquest and make a full report of the death. As the coronor gets a fee for every disinterment and inquest, he of course is perpetually on the alert. In addition to this our health officers are subject to a heavy penalty if they do not promptly collect and report mortality statistics." Even some small cities do careful and thorough work. Manchester, N. H., for example, with a population of only 56,000 publishes a monthly statement of morbidity from infectious diseases and of deaths by age, nativity, and cause, with comparative tables for preceding years.

In general, however, it can scarcely be denied that American state and municipal statistics are incomplete and inaccurate. Even those which are good in themselves are often so arranged that they cannot be conveniently correlated and compared. Yet sanitary statistics are the basis upon which sanitary reforms must be founded; and it is as useless to expect a health officer to do his work well without full statistical information as to require a merchant to carry on his business without keeping accounts.

The effects of the excellent English system of registration give some idea of what might be accomplished in this country also. Dr. Newsholme (*Journal of the Royal Statistical Society*, March, 1896) wrote of it as follows: "It is not too much to say that the system of death classification and registration in this country is the foundation on which the great sanitary ameliorations already achieved have been built. The mortality of every district throughout the country has been the subject of analysis. The attention of local authorities has been compelled to any special incidence of deaths in their districts. Medical officers of health have been created throughout the country, one of whose chief duties is to draw forcible attention to the local incidence of deaths, and recommend measures tending to decrease the sickness and death rate. Where the local supervision has been lax, or the medical officer's recommendation has not been carried out, the Registrar-General's periodical returns have enabled the medical staff of the Local Government Board to intervene and investigate any local outbreak of fatal diseases. The publicity given to the Registrar-General's weekly, quarterly, and annual reports has evoked a spirit of inquisitiveness, and even of emulation, throughout the country; and although the comparison of death rates of great towns with each other, particularly for short periods, is fraught with fallacies, the general result of the publicity secured and of the consequent efforts on the part of local authorities has been an immense improvement in the public health of the community."

Some such national bureau for the registration of sanitary statistics we must surely have in the United States; whether it is to grow out of the permanent census bureau or the public health and marine-hospital service, does not yet appear.

C.-E. A. WINSLOW.

THE JEWS IN PRUSSIA AND GERMANY.

Mr. Arthur Ruppin has two articles on the *Social Relations of the Jews in Prussia and Germany* in Conrad's *Jahrbücher für Nationalökonomie und Statistik* (March, 1902, p. 374, and June, 1902, p. 760). The study is presented in five chapters, of which the first appears in the leading article and the four following in the second. Chapter one treats of the personal and family relations of the Jews as compared with the Christians. Interesting figures are given for the universal distribution of the Jews, their total population, about 7,500,000, being divided generally into 6,250,000 in Europe, 225,000 in Asia, 500,000 in Africa, and rather less than 500,000 in America. In Europe, the distribution is, in the four greatest groups, 2,225,000 in Russia, 1,125,000 in Austria, over 125,000 in Great Britain, and over 500,000 in Germany. The largest group in Asia is 75,000 in Palestine; in Africa, 200,000 in Morocco; and in America, 350,000 in the United States. With the half million in Germany, Ruppin concerns himself; he shows the growth in Prussia and Germany by a table of which the following is a condensation: —

Year.	Prussia.		Germany.	
	Number of Jews.	Per cent of Total Population.	Number of Jews.	Per cent of Total Population.
1816	124,000	1.19	——	——
1861	255,000	1.38	——	——
1871	325,000	1.32	512,000	1.25
1880	364,000	1.33	562,000	1.24
1890	372,000	1.24	568,000	1.15
1900	392,000	1.14	——	——

The sex distribution is noted as closely following that of the Christian population. The comparative vitality of Jews and Christians in Prussia is shown in three tables of birth and still-birth. An interesting testimony of the greater rigor of social estimation and less rigor of poverty, among the Jews, is found in the fact that in Prussia the average per cent of illegitimate to legitimate births from 1875 to 1899 was 8.8 with Christian mothers and but 2.8 with Jewish mothers. Three other tables show that the fecundity of Jews and Christians in Prussia, averaged per year in four periods from 1820 to 1897. The decrease observable in both classes is decidedly greater for the Jews. The decrease from 1878 to 1897 was from 3.95 per cent to 3.82 per cent per 100 Christian mothers, and from 3.03 per cent to 2.23 per cent per 100 Jewish mothers. An interesting table on the average death rate in Prussia may be summarized as follows: —

AVERAGE DEATH RATE IN PRUSSIA.

	1878–82.	*1888–92.*	*1893–97.*
Per 1,000 Christians . . .	25.23	23.26	21.84
Per 1,000 Jews	17.53	15.71	14.73

A table of comparative ages in Berlin in 1895 shows that 12.86 per cent of the Christians and 15.77 per cent of the Jews were over 50 years of age. The following extract from a table on suicide in Prussia, giving the average per year in the period 1893–97, may be suggestive: —

	Male.	**Female.**
Per 100,000 Christians	31.17	8.02
Per 100,000 Jews	36.50	11.89

Three tables show comparative figures on marriage, for various year periods, in Berlin and Prussia,— the relative per cent of the Jews being surprisingly low. In three interesting tables on divorces in Berlin, the rate for Jews appears slightly less than that for Catholics, which is in turn less than that for Protestants. One may note a remarkably small per cent of Jewish divorces caused by the wives, as compared with a similar proportion of Christian divorces,— the ratio between these per cents being almost exactly 1 to 4.

Chapter two is concerned with the mutual and reciprocal relations between the Jews and the Christians. These tables show a remarkable increase in inter-marriage between the Jews and Christians in Prussia and Berlin, as well as a preponderant tendency for the offspring of these unions to accept Christian beliefs,— probably following a conversion of the Jewish parent. The tables seem to furnish a disproof of the assumption that such mixed marriages are less fruitful or productive of less vigorous offspring. The fecundity in Berlin is shown to be double as great proportionally from mixed as from pure unions, and in Prussia the ratio is almost 3 to 2.

Chapter three has to deal with the place of the Jews in industrial life. Six tables show the distribution of Chistians and Jews in various occupations in Prussia and in Germany and give evidence of a substitution among the Jews of manufacturing and industry in the important place traditionally held by agriculture. Four other tables give figures of the distribution of Jews in large cities; in 1895, over 43 per cent of the Jews in Germany lived in cities of over 50,000 inhabitants. In Prussia, in the same year, almost 23 per cent of the Jews lived in Berlin, while over 25 per cent lived in other cities of over 50,000 inhabitants. An interesting comparison is found in the per cent of Jews in Prussia living in cities of over 20,000 inhabitants in 1871 (about 32 per cent) and in 1895 (about 58 per cent).

Chapter four shows in seven tables the school and university culture of Christians and Jews in Prussia. Over one-half of the Jews in the universities in 1895 were engaged in the study of medicine.

Chapter five with two tables on criminality and morality ends the illuminating and suggestive article.

E. H. DAVIS.

TWO IMPORTANT GOVERNMENT CATALOGUES.

Catalogue of the Public Documents of the Fifty-fifth Congress and of other departments of the government of the United States for the period from July 1, 1897, to June 30, 1899, being the "Comprehensive Index" provided for by the Act approved January 12, 1895. Prepared under the supervision of the Superintendent of Documents, Government Printing Office. Washington, 1901. 55th Congress, 3d session. House Doc. No. 317. 1069 pp. 4to.

Tables of and annotated index to the Congressional series of United States Public Documents. Prepared in the office of the Superintendent of Documents, Government Printing Office. Washington, 1902. 753 pp. 4to. [L. 8vo.]

The former volume is a worthy continuation of the noble series of records which have followed and supplemented Dr. J. C. Ames'

Comprehensive Index, published in 1894, and with it now cover the entire output of the United States as a publishing concern for precisely a decade, 1889–99. Bibliographically as complete and accurate as human work can be, and admirably arranged and printed, they are an almost never-failing source of satisfaction to the user. The new volume is the fourth, and furnishes at the end useful and revised alphabetical and classified lists, showing their relations to each other, of 383 distinct "governmental authors," *i.e.*, different departments, bureaus, etc., which have issued publications.

Placed beside the above the *Tables of Documents* does not appear to advantage. As its title-page fails to state, but as the preface explains, it is intended to constitute the second part of a new edition of the *Checklist of Public Documents*, and covers the Congressional series of documents of the 15th to the 52d Congresses inclusive only, 1817–93, the period since the documents were first numbered to the beginning of the "*Comprehensive Index*" series of catalogues. It is announced that the first part of the new *Checklist* will cover the documents of the first fourteen Congresses, 1789–1817, and that the third and final part will include publications of Executive departments and offices which have been printed without Congressional document numbers.

The largest part of the volume before us, pp. 111–753, is the alphabetical index, in which the entries are severely brief, and the references, instead of to the Congresses and sessions, are to the serial volume numbers devised by Dr. Ames. This feature will no doubt make the index much more convenient in use than Poore's *Descriptive Catalogue*, which it is obviously intended largely to supersede, provided the misprints and errors in the column of serial numbers are few. Unfortunately a set of rather serious misprints occurs on p. 7 in the preface, where a change in the serial numbers of certain volumes is recommended, and the numbers are printed 1779–82, 1773–78, and 1773–82 when 1479–82, 1473–78, and 1473–82 were apparently intended. This tends to impair confidence in the accuracy of the references. Moreover the great advantage obtained by changing these numbers is not made clear, and the references in the index to the volumes whose serial numbers have been changed will be misleading when sets of the documents are consulted whereon for any reason there has been failure to change the numbers.

L. P. LANE.

CENSUS OF ROSARIO.

Primer Censo Municipal de Poblacion de la Ciudad del Rosario de Santa Fe. Republic Argentina, 1902.

This first municipal census of the city of Rosario, the second city in size in the Argentine Republic, is published in a large folio volume of 559 pages fully illustrated with very good heliotypes of the public streets and buildings of the city, and colored diagrams representing the statistical results of the census.

The population had increased from the founding of the city, in 1725, to a total of 112,461 in 1900. More than half this number, however, has been added since 1887, when the population was 50,914. Of the present population, 46,682 were of foreign birth, 25,679 being Italians and 11,753 Spaniards.

The blank employed for obtaining the census called for the following items: Name; sex; age; nationality; profession or occupation; read or write? civil condition: single, married, widower or widow, house or land owner. The number of births in the city in 1900 were 3844, and the rate was 34.1 per 1000. The marriages were 772, and the rate 6.8 or 13.6 (persons married). The deaths were 3265, and the rate was 29.03 per 1000. The most destructive diseases were: tuberculosis, from which there were 259 deaths; meningitis, 272; infantile tetanus, 104; acute lung diseases, 405; enteritis and gastroenteritis, 591; typhoid fever, 87; measles, 52.

Other important items embraced in the report, besides those pertaining to the population, are the meteorological tables, statistics of commerce and industry, sciences, arts and literature, manufactures, occupations, banks and financial institutions, railways, sanitary department, municipal government, education, charities, statistics of churches and religious sects, streets and theatres. The work of taking and publishing the census was done under the direction of Señor Don Luis Lamas, and is a very creditable public work.

INQUIRY IN REGARD TO TUBERCULOSIS.

The Committee on the Prevention of Tuberculosis, formed last June under the auspices of the Charity Organization Society of New York City, in addition to spreading information by means of literature and lectures addressed to various classes of the population, and to working for the multiplication and development of agencies to care for consumptives, has undertaken an investigation into the social and economic aspects of tuberculosis. No attempt is being made to duplicate the medical and bacteriological investigations that have been made by many scientists in many lands, but such questions are being taken up as the relation of consumption to density of population, housing conditions, occupation, race characteristics, social habits — relations which vary with locality and time, but cannot be disregarded in any intelligent effort to cope with the disease.

As a foundation for local studies the statistics found in the Twelfth Federal Census have been worked up to show the general incidence of the disease in regard to age, sex, conjugal condition, race and nationality, occupation, and geographical distribution. Since the extraordinary conditions prevailing in New York City make applications of these generalizations unsafe, and since the Committee is confining its practical work to the borough of Manhattan, the main investigation is being directed to the disease as it exists in this part of New York City.

The system of compulsory notification of living cases which has been developed since 1894, and the admirably kept tuberculosis index of all cases known to the Health Department, together with the official death certificates, afford a mass of material. Maps have already been prepared showing the distribution of the mortality from consumption over the city, its relation to density of population, and its concentration in typical blocks and houses, as well as diagrams representing the prevalence of the disease among men and women at different ages and by general nativity and the decrease in the death rate.

The tabulation of the death certificates for 1902, for the points of nationality and occupation, with reference to sex and age, is now going forward. The results will be supplemented by a similar tabulation of the records of living cases.

In addition to this a schedule of sociological inquiries in considerable detail has been prepared for collecting histories of consumptives from the tenement districts of Manhattan. These records are being kept in various institutions which care for such cases, by the special workers among tuberculosis cases in the United Hebrew Charities and the Charity Organization Society, and by several physicians and nurses who work in the poorer sections of the city It seems probable that fifteen hundred of these comparatively full records of housing and social conditions and occupations will be available by the first of June.

There is small room for doubt that the results obtained from these histories and from the Health Department records will indicate further investigations into certain occupations carried on in the city, into certain places of amusement or of congregation for other purposes, and into the habits of certain sections of the population, and that these investigations will result, directly or indirectly, in ameliorating some of the conditions which make for the persistence and the spread of "the great white plague."

REPORTS OF INSTITUTIONS.

The State of New York, in 1886, added to its Public Health Law certain provisions relating to institutions for homeless children. The object of the new legislation was to remedy the unsanitary and dangerous conditions prevailing in many of these institutions, and to prevent the spread of contagious diseases among the inmates. The State Board of Charities recently attempted to ascertain how great a compliance had been accorded the law during its fifteen years of operation, and to this end the Board investigated conditions in 148 of the children's institutions of the state. It found the degree of compliance greatest in the institutions of New York City, and least in those scattered over the western part of the state.

In every case it was found that the institution in question had obeyed the law as far as the employment of a regular physician went, yet 17 institutions admitted children without examination by a physician, and 11 more did so under "special circumstances." Only 49 were found to comply strictly with the requirement which calls for the filing of a physician's certificate of the child's condition along with the commitment papers, and one-third of the entire number of institutions failed, either wholly or partially, to comply with the section requiring that every child at entrance be placed in strict quarantine until discharged by a physician. The reason most frequently given for failure in this latter instance was "lack of facilities." Nearly four-fifths of the institutions were found to comply with the section which requires a monthly examination, by a competent physician, of the sanitary conditions of the institution and of the physical condition of each child, but less than a third completed the requirement by filing a report of such examination. Only about 19 allowed the amount of air space per occupant in the dormitories which the law calls for, but a larger proportion complied with the provision requiring a space of not less than two feet between the beds.

The report includes also a consideration of the occurrence of contagious diseases in the institutions visited, a discussion of preventive and protective measures, and some account of the more important objections and recommendations made by officials who have had the best possible opportunity of observing the law in its practical application. It emphasizes throughout the inestimable value of filing regular, systematic reports.

A. M. S.

STATISTICAL YEAR-BOOK OF GERMANY.

The ninth [1901] issue of the *Statistisches Jahrbuch Deutscher Städte*, published under the direction of Mr. N. Neefe, Director of the Statistical Bureau of Breslau, in collaboration with nineteen colleagues, is in arrangement and composition much the same as the previous issue, though it is enriched by the addition of a few new studies and the re-entrance of several articles which have appeared in former years. Twenty divisions of the 1900 year-book have been enlarged and extended. Of the changes, the most important are as follows: In Part II has been inserted a table of the Landed Property of German Municipalities and of the World. This study has been made part of a special division of the book. In Part 21 has been included the statement of the results in the promotion and extension of Poor-Relief and Philanthropy, as shown in the Tenth and Eleventh Conferences of the Committees of the German Statistical Council. In Part 22 appears for the first time a statement of the Income, Output and Profits of and Duties on Stock-yards and Slaughter-houses. To Part 25 has been added a Summary of the results of Landtag and Reichstag Elections. More extensive presentation is made of the subject of Industrial Legislation, Conditions of Income and Well-being, Poor Relief and Philanthropy, National Internal Commerce, and National Administration, Representation and Defence.

THE MOVEMENT IN PRICES IN GERMANY.

Die Entwickelung des Preisniveaus in den letzten Jahren. Conrad's *Jahrbücher*, November, 1902, p. 638, *et seq.*

The present industrial depression in Germany followed a period of very active prosperity, and the author's purpose in writing the present article is to show what had been the effect of the rapid change on the level of prices. According to Hamburg quotations he found, with regard to 163 articles, that, on the whole, the level in 1900 remained the same as in 1899. These two years show a decline as compared with several previous years, but this decline simply overbalances a rise which had taken place in the preceding period. The year 1901, as was to be expected, shows a decided fall. Considering prices from 1847–80 as 100, the index number for 1896 is then 80.55; 1897, 83.10; 1898, 81.63; 1899, 78.61; and 1900, 79.30. But in 1901 it was only 75.54. This is the lowest level which had been heretofore noticed.

For the period 1891–95 the index number was 88.28, while for that of 1896–1900 it was 80.68. The industrial prosperity was accompanied by only a small increase of prices, while not until 1901 did the depression cause any appreciable reduction. On the whole, despite the production of gold, money has continuously risen in value.

Colonial products after 1897 fell heavily in price, and in 1900, as compared with 1847–80, they stood as 76 and 79. In the year 1901 they fell again to 64.6,— the level of 1899. Sugar is not included in this, since it is no longer regarded as a colonial product. In Magdeburg sugar has remained at the price of 10 m. per cwt. during the past years, as against 31 m. during 1879–83, and 16 m. in the period, 1889–93.

Since 1891 indigo has been declining in price. The improvements in the methods of producing it depressed the price even more after 1897. It cost but 401 m. per cwt. in 1901, as against 701 m. in the period 1871–80, 587 m. in 1881–90, and 487 m. in 1891–1900.

The prices of metals, as well as that of coal, in the year 1900, advanced considerably, but in 1901 the price of the former sank to the level of 1899, although the coal combine succeeded in preventing any sharp decline in the price of coal.

Tin rose in price from 69 to 102 m. in 1899 and reached 112 m. in 1900, but sank to 105 m. in 1901. From 1898–1901 iron was quoted at 2.71, 3.30, 3.86 and 3.25, respectively; copper at 51.3, 65.5, 72.7 and 72.5, respectively; lead advanced much less.

Cereals underwent only insignificant variation during the four years. In 1901 the price stood lower than during the preceding three years. For the whole empire (in contradistinction to the Hamburg quotations) the cereal prices show an improvement in 1901 over the preceding period, 1894–98. Spirits (alcohol) and raw sugar have appreciably fallen off. Cotton and wool which in the years 1899 and 1900 manifested a marked improvement sank again almost to their level during 1894–98. Lead was thrown back from 35 to 26.5 in 1900, but it is nevertheless above the level of 1894–98 which was 27.6. Copper went from 160 in 1900 to 154.8 in 1901 but at that, stands higher than 98.8 which was its level in 1894–98. Zinc dropped from 50.4 and 41.5 to 34.8 in 1901 (1894–98 = 29.7). Tin fell off from 253 and 275 to 246 (1894–98 = 134.8). Coal has steadily risen in price since 1897, 24.5 as against 20.7 in the period, 1894–98.

From the tables given (pp. 643–646) the author shows that in the years 1899, 1900, and 1901 the index number of general prices changed, as 63, 75, and 70, respectively. In the two years (1900 and 1901) which showed less economic activity the prices stood above the level of the period (1892–1900). The year 1901 presents a falling back, but it is still above the level of the period (1892–1900). From the indications at Hamburg, it is certain that the increase manifest in England would be less were more articles enumerated.

If attention be especially concentrated on cereals it can be shown that marked changes have not taken place during the past few years. Wheat and rye rose somewhat in 1901, as against 1900, but both years stood below 1898 and 1899 and the period (1879–89) which was itself somewhat low. On the other hand, barley and oats maintained themselves at the heighth of the previous year over the level (1879–89).

E. E. AGGER.

STUDIES IN ILLEGITIMACY.

Die unehelichen Kinder in Berlin, by H. Neuman. *Die unehelichen Geburten als Sozialphänomen*, by Fr. Lindner. Review, by W. Kahler in Conrad's *Jahrbücher*, November, 1902, p. 731.

An interesting phase of the social phenomenon of illegitimacy is that of the later-life conditions of the illegitimate children. Neuman undertook to determine what the social and health conditions were of the illegitimate children born in Berlin in the year 1896. The investigator was forced to obtain all his material by private means. He inquired into the condition of 7229 illegitimate children and although in the case of 300 children the various details of condition could not all be ascertained, the work is exceedingly useful. The results of his study, which he gives in 40 detailed and well-interpreted tables, lead him earnestly to exhort that better methods be adopted in the care of illegitimate progeny.

The field of the second investigation was Bavaria. Bavaria used to stand at the very head of all European states in the number of illegitimate births; now it is still found in the second place, having been overtaken by Austria. Out of every 100 born alive the illegitimate were in: —

	1865–69.	*1876–80.*	*1887–90.*
Austria	14.52	13.84	14.67
Bavaria	20.59	12.86	14.01
Germany	—	8.67	9.23
Prussia	8.14	7.53	7.81

The statistical data upon which the author bases his conclusions are arranged in well constructed tables. He found that marriage legislation and the industrial policy as well as the general economic and political conditions of the country exert an influence on illegitimate child bearing. Concerning religious denominations,— it seemed possible that an influence might be traced along these lines, since the minority, which holds different faiths, keep themselves morally cleaner than the majority, which clings to one faith (Catholicism); but here also the author points out that economic motives may easily constitute the determinative cause. He is of the opinion that the legal status of illegitimate children has much significance in the number of illegitimate births; he denies also that the country districts show more favorable conditions than the cities. His conclusion as regards civil status, age, and sex conditions are exceedingly general and vague, but he finds a certain parallelism between the total, and the number of illegitimate births. There is also a chapter on the later life conditions but this is based on other than Bavarian material.

E. E. A.

AMERICAN

STATISTICAL ASSOCIATION.

NEW SERIES, No. 62. JUNE, 1903.

A STATISTICAL STUDY OF PATIENTS ADMITTED AT THE CONNECTICUT HOSPITAL FOR INSANE FROM THE YEARS 1868 TO 1901.

By Rollin H. Burr.

A study of all the cases admitted to a single institution which receives a very large percentage of the insane of Connecticut is interesting both to the sociologist and the psychiatrist. To the sociologist such a study may aid in revealing those laws which, working in a community of seven or eight hundred thousand people consisting of every class, tend to produce a considerable number of people alien from the general community. To the psychiatrist such a study is interesting in that the history of the mental disease of a single individual is compared with that of a number of people suffering from the same mental disease.

The large number of cases admitted at the Connecticut Hospital permit a study along many lines. The questions studied by the writer include the following: admissions of individual patients by general nativity from towns and cities by decades and for total period, 1868–1901; admissions from towns and cities by decades and for entire period compared with the population, also admissions by general nativity compared with the population; nationalities of insane from towns and cities by decades and for total period compared with native and foreign population; relative increase or decrease of nationalities among the insane during each decade; nationalities of insane by periods and by the counties of the State compared with the population; nativity of insane by periods for entire State and for two largest cities compared with the population by nativity; increase or decrease of the total number of insane suffering from the same psychosis in different decades by towns and cities, also a comparison of the total number of insane in the different decades; percentage of each psychosis by decades from towns and cities; percentage of psychoses from towns by counties and decades compared with the percentage of the population of the towns by counties and decades; percentage of each psychosis from towns by counties for whole period; percentage of the various psychoses from each city for whole period compared with average population of each city, also total psychoses of cities compared with those of towns; percentage of nationalities in different psychoses by periods from towns and cities; percentage of nationalities in each psychosis by towns and cities for whole period; ages at which the different psychoses are most prone to appear; duration of mental diseases of those who have died in the institution; heredity in relation to the different psychoses; psychoses of insane classified by occupation, also occupations of insane compared with the census report of occupations.

A small percentage of the insane of the State have not entered the institution, and therefore are not included in the tables. Hartford Retreat has received a small number of the insane of the State, and some have entered private institutions. Those not accounted for in this way, as deduced from a study of the reports of these institutions, are approximately 15 per cent of the total number of the State's insane for the whole period. The institution from which our statistics are taken, however, receives a large number of the patients admitted to these smaller institutions at some time during the course of the patient's mental disease. For this reason the percentage given above as not accounted for in the statistics is doubtless too large. Of those insane who have not come to the institution, the great majority are probably of the very well-to-do classes.

A few remarks concerning the method of collecting the statistics are necessary. (1) All patients are counted once in each set of tables. The number of individual cases admitted (not the number of admissions) is taken into consideration. The number of admissions to the hospital from its founding in 1868 to January 1, 1901, the period from which the numbers are taken, is over 9,400. The actual number of individuals treated is only 7,657. (2) The Kraepelin classification of mental diseases is used. (3) Where comparisons are made with the population, the census immediately following the decade is taken. This method of comparing the number becoming insane during a given period with the approximate population for the period is not a usual one, and admits of a certain degree of error; but it was the only available method to use, for any other would entail a very large amount of figuring. (4) The first period used is not a decade, but covers a period of twelve years. The number of cases admitted during the first two years was but a few compared with the total number for the period, so that the percentage of error is slight. (5) The division between towns and cities is somewhat artificial. With the exception of Manchester, Naugatuck, Willimantic, and Torrington, all places of over 8,000 have been classified with the cities. These places, in fact, have increased rapidly in population during the last decade, and have only exceeded 8,000 during that time; and they are therefore classified with the towns. On the other hand, Derby, Rockville, Norwalk, and Putnam, having been long chartered as cities, and their population being so near 8,000, are classified with the cities in the tables.

I have to acknowledge especially the hearty co-operation of Dr. Allen R. Diefendorf, psychiatrist at the Connecticut Hospital for the Insane, who has given much of his valuable time in diagnosing many cases of mental disease and in supervising and criticising the work. I am also greatly indebted to Dr. Charles W. Page, former superintendent of the institution, for many privileges granted. To these and to all others who by criticism, suggestion, and interest have aided in the production of the work, and especially to those who have helped in the laborious collaboration of the tables, I am exceedingly grateful.

Bibliography.—While preparing the tables, the author has undertaken a partial review of the literature on the etiology and increase of insanity. The material collected is abundant, but it cannot be introduced for extended discussion in this paper. On the etiology and increase of insanity the reader is referred to "The Modern Conception of the Etiology of Insanity," John Batty Tuke, *Medical Record,* Vol. 54; "Increase of Insanity: . . . Among Negroes," Thomas J. Mays, Boston *Medical and Surgical Journal,* Vol. 136; "On the Supposed Increase of Insanity," Edward Jarvis, *American Journal of Insanity,* Vol. 8; "Analysis of the Causes of Insanity," J. B. Blackford, *Journal Mental Science,* Vol. 44; "Insanity among Women," Clara Barrus, *Journal of Nervous and Mental Diseases,* June, 1896; "Causes of Insanity," H. P. Stearns, Putnam, N.Y., 1883; W. Bevan Lewis, "Text-book of Mental Diseases," Griffin & Co., London; "Needs of Insane," C. L. Dana, *Journal of Nervous and Mental Diseases,* Vol. 9, 1882; *Zeitschrift für Psychiatrie,* XL. Band, 1884, Dr. Kollman; "Les Causes de la Folie," Edward Toulouse, Paris, 1896; and "Increase of Insanity in the United States," Foster Pratt.

For "heredity in relation to mental disease" the reader is referred to the following: "Some Studies in Heredity," Martin W. Barr, *Journal Nervous and Mental Diseases,* February, 1897; "Insane Heredity," H. P. Stearns, *Alienist and Neurol-*

ogist, Vol. 18; "Heredity in Relation to Mental Disease," W. H. Farquharson, *Journal Mental Science,* Vol. 44; to W. Bevan Lewis on "Mental Diseases" referred to above.

Table I.

A glance at Table No. I will at once reveal the fact that, while there is only a slight absolute increase in the percentage of the foreign element in the institution during the thirty-two years from the towns, there is quite a marked increase from the cities. This increase of the foreign insane from the cities is doubtless due to the fact that the foreign element has largely entered the cities. Something more striking is the fact that there has been a marked diminution of the foreign insane "having no residence," which in the first decade comprises 53.5 per cent., but in the last only 41.8 per cent. Table I*b* shows the total increase of foreign born insane from the entire State who in the first decade numbered 516, or 36.3 per cent. of the insane, and in the last, 1404, or 39.6 per cent. of the insane, or an increase of 3.3 per cent.

TABLE 1*a*.

NUMBER AND PERCENTAGES OF ADMISSIONS OF INDIVIDUAL PATIENTS FROM TOWNS AND CITIES BY GENERAL NATIVITY, BY DECADES AND FOR TOTAL PERIOD.

	Towns.					Cities.					No Residence Stated.				
	Total.	Native.		Foreign.		Total.	Native.		Foreign.		Total.	Native.		Foreign.	
		No.	Per cent.	No.	Per cent.		No.	Per cent.	No.	Per cent.		No.	Per cent.	No.	Per cent.
1868-1880	659	464	70.4	195	29.6	691	408	59.0	283	40.9	71	33	46.5	38	53.5
1880-1890	1,109	767	69.1	342	30.9	1,431	788	55.0	643	45.0	146	80	54.9	66	45.1
1890-1900	1,302	895	68.6	407	31.3	1,961	1,084	55.2	877	44.8	287	167	58.2	120	41.8
1868-1900	3,070	2,166	69.2	944	30.8	4,083	2,280	55.8	1,803	44.2	504	280	55.5	224	44.5

1*b*.

TOTAL NUMBER OF PATIENTS.

	Total.	Native.		Foreign.	
		No.	Per cent.	No.	Per cent.
1868-1880	1,421	905	63.7	516	36.3
1880-1890	2,686	1,635	60.8	1,051	39.2
1890-1900	3,550	2,146	60.4	1,404	39.6
1868-1900	7,657	4,686	61.2	2,971	38.8

Table IIa.

Table II*a* needs but little comment. It discloses the fact that the urban life is more productive of insanity than the suburban or country life. It also gives the increase of insanity during the three decades: whereas in the first period there is approximately 1 insane to every 516 of the suburban and 409 urban population, in the last there is 1 insane to every 303 suburban and 261 urban inhabitants.

TABLE II*a*.

ADMISSIONS FROM TOWNS AND CITIES BY DECADES AND FOR ENTIRE PERIOD COMPARED WITH THE POPULATION, ALSO ADMISSIONS BY GENERAL NATIVITY COMPARED WITH THE POPULATION.

1868–1880.	From	Towns	659,	or	1	Patient	to	every	516	Inhabitants.
" "	"	Cities	691,	"	"	"	"	"	409	"
1880–1890.	"	Towns	1,109,	"	"	"	"	"	330	"
" "	"	Cities	1,431,	"	"	"	"	"	265	"
1890–1900.	"	Towns	1,302,	"	"	"	"	"	303	"
" "	"	Cities	1,961,	"	"	"	"	"	261	"

Table II*c* combines the figures of the previous table, and gives the proportion of insane as 1 to every 438 in the first period, 1 to every 281 in the second, and 1 to every 255 inhabitants in the last. The striking difference between this and the following, which gives the proportion as shown by the reports of the institution, is evident. The latter gives the proportion of insane in 1880 as 1 to every 1,216 inhabitants, in 1890 as 1 to every 545, and in the last decade as 1 to every 444 inhabitants. Further, the ratio of insane to population, as deduced from the census reports of 1880, 1890, and 1900, are for the respective decades 1 to every 1,233, 1 to every 555, and 1 to every —.* The method adopted by the writer in estimating the "proneness of people to become insane" may be questioned. It is apparent, however, that a comparison of the actual number of people becoming insane during a given period with the approximate population of that community from which the insane are drawn gives a more nearly correct proportion of the insane and their increase than the method usually adopted in United States census reports and by sociologists. The fallacy of comparing the number in a given institution at different moments with the population at the same moments, not considering the readmissions of many different patients and the fact that many of them have been in the institution for long periods, is clearly seen. Such comparisons, indeed, give us the number of insane relative to the population; but the "proneness of people to become insane" is not derived from this method of comparison, and especially is this true where but a single generation enters into the figures.

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* Census returns of insane not yet published.

Table II*d* gives the relative numbers of insane among the native and foreign population. The sociological grounds for the large numbers of the insane among the foreign elements of our community have been discussed in many articles* and it is outside of the limits of this paper to go into the reasons for such increase.

TABLE II*c*.

ADMISSIONS *vs.* POPULATION.

1868–1880	1,421	Insane, or 1 to every	438	Inhabitants.
1880–1890	2,686	" " " " "	281	"
1890–1900	3,550	" " " " "	255	"

RATIO OF INSANE TO POPULATION AS SHOWN BY HOSPITAL REPORTS.

1870	1 Insane to every	2,346	Inhabitants.
1880	" " " "	1,216	"
1890	" " " "	545	"
1900	" " " "	444	"

II*d*.

RELATIVE NUMBERS OF INSANE BY GENERAL NATIVITY.

1868–1880	Native	905,	or 1 Insane to every	544	Native	Inhabitants.
1868–1880	Foreign	516,	" " " " "	251	Foreign	"
1880–1890	Native	1,635,	" " " " "	344	Native	"
1880–1890	Foreign	1,051,	" " " " "	175	Foreign	"
1890–1900	Native	2,146,	" " " " "	312	Native	"
1890–1900	Foreign	1,404,	" " " " "	169	Foreign	"

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* Ellis, "The Criminal," p. 297; International Conference of Charities and Corrections, Sect. 4, pp. 82, 86, 181; National Conference of Charities and Corrections, 1898, p. 268.

Table III.

A comparison of the nationalities of the insane from the towns and cities cannot be made as closely as may be desirable, since the census reports of the population do not give the population of all our cities by nativity. A comparison of Tables III*a* and *b*, however, reveals some important facts. The proportion of insane among the Irish is more than double that of other foreign nations; whereas the proportion of Irish in the State in 1880 is only 11.8 per cent. of the total population, the proportion of their insane during the first period is 20.6 per cent. for the towns and 29.4 per cent. for the cities, or an average of 25 per cent. This is, again, more striking in comparing the next period, when the proportion of Irish in the State is 10.8 per cent., while the average insane is 24.2 per cent. The English, French, and German also show a relative increase in insanity in the later periods, and among the Swedes there has been a striking increase.

TABLE III.

NATIONALITIES OF INSANE FROM TOWNS AND CITIES BY DECADES AND FOR TOTAL PERIOD COMPARED WITH THE NATIVE AND FOREIGN POPULATION.

III*a*. INSANE.

	Towns.			Cities.		
	1868–1880.	1880–1890.	1890–1900.	1868–1880.	1880–1890.	1890–1900.
Ireland . . .	20.6%	19.4%	15.0%	29.4%	29.4%	23.6%
England . .	3.5	3.6	3.1	2.9	4.5	3.5
France . . .	.1	.2	.2	.3	.2	.4
Germany . .	3.1	3.5	4.	5.2	6.5	7.0
Russia . . .	.0	.0	1.	.1	.2	1.7
Sweden . . .	.5	2.0	3.6	.0	.8	2.0
Italy	.1	.4	1.2	.5	.7	1.1
Other Nations	2.9	3.3	4.9	2.5	2.3	5.1
Total Foreign	31.0	32.6	33.1	41.0	44.9	44.5
Natives . .	69.0%	67.3%	66.8%	58.9%	55.09%	55.44%

IIIb. POPULATION.*

	1868–1880.	1880–1890.	1890–1900.
Ireland	11.3%	10.8%	7.7%
England	2.4	2.9	2.3
France	.2	.3	.3
Germany	2.4	4.3	3.5
Russia	—	.8	1.2
Sweden	.3	1.7	1.7
Italy	.1	.7	2.1
Other Nations . . .	4.1	7.1	7.4
Native	79.1%	71.3%	73.7%

Table IV.

This table gives a comparison of the insane for the whole period by foreign nationality from the cities and towns of the State and shows the large relative preponderance of Irish insane.

TABLE IV.

PERCENTAGES OF FOREIGN BORN INSANE, BY NATIVITY, FOR WHOLE PERIOD.
(*To be compared with the Average Population.*)

	Cities and Towns.	Average Foreign Population.†
Ireland	57.2%	39.0%
England	9.4	10.5
France	.7	1.0
Germany	13.0	14.2
Russia	1.7	3.1
Sweden	5.2	5.5
Italy	1.9	3.3
Other Nations . . .	10.5	22.7

Table V.

This table shows the proportion of the total insane of each nationality entering the institution in the three consecutive decades, and by comparison of Tables V$^{1 \& 2}$ we see the relative increase or decrease of each nationality in the three different periods. That which is most marked in the tables is the increase of the insane Irish, Swedes, Italians, and Russians.

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* Census does not give foreign population by city and town.

† Average of census reports 1880, 1890, 1900

TABLE V.

COMPARATIVE PROPORTIONS OF TOTAL NUMBER OF EACH NATIONALITY INSANE IN DIFFERENT PERIODS.

V¹.

Insane.	Towns and Cities.		
	1868–1880.	1880–1890.	1890–1900.
Irish	21.2%	38.6%	40.1%
English	17.1	39.8	43.0
French	14.3	32.1	49.9
German	15.5	34.2	50.1
Russian	1.2	5.0	93.7
Swedes	2.3	26.4	71.5
Italian	5.3	19.7	74.9
Other Nations . . .	12.4	27.5	60.0

V².

Population.	Towns and Cities.		
	1868–1880.	1880–1890.	1890–1900.
Irish	32.2%	35.4%	32.3%
English	26.8	35.7	37.4
French	19.4	36.8	43.6
German	19.8	39.2	40.
Russian	.6	33.7	65.8
Swedes	6.8	39.6	53.3
Italian	4.8	32.2	62.8
Other Nations . . .	—	—	—

Table VI.

An analysis of Table VI reveals some interesting facts. It shows (1) that the proportion of native insane compared to percentage of population from Fairfield, Litchfield, and Windham Counties is much less than from the remaining counties during the first decade, and that Middlesex County gives the highest proportions; (2) that in the second and third decades the proportion of native insane is quite close for the different counties except that of Middlesex, which gives a proportionately large percentage of insane; (3) that there is a relatively small percentage of Irish from Fairfield, Litchfield, and Windham Counties during the first decade, while there is a very marked proportionate increase of the insane Irish in all the counties in the later decades; and (4) that the Swedes and native Americans show the least insane to population.

TABLE VI.

NATIONALITIES OF INSANE BY PERIODS AND BY COUNTIES OF STATE COMPARED WITH THE POPULATION.

One person insane to following number of population: —

	Native.	Irish.	English.	German.	Swedes.
Fairfield:					
1880	642	350	659	262	280
1890	388	166	240	230	298
1900	377	138	218	236	244
Litchfield:					
1880	719	315	—	231	—
1890	432	132	285	174	—
1900	380	150	266	277	230
Windham:					
1880	974	948	—	—	—
1890	439	218	453	—	341
1900	427	104	231	162	129
Tolland:					
1880	484	130	—	631	—
1890	410	77	110	625	—
1900	347	—	117	184	—
Hartford:					
1880	579	185	471	342	661
1890	340	116	213	208	430
1900	333	84	129	150	188
New Haven:					
1880	559	286	586	326	—
1890	364	122	170	191	308
1900	407	147	306	438	192
New London:					
1880	561	150	206	140	—
1890	429	107	241	779	149
1900	366	90	173	162	—
Middlesex:					
1880	271	117	58	493	341
1890	191	75	118	146	155
1900	195	72	147	139	113

Table VII.

Table *a* combines the figures of Table VI and gives the proportion of each nationality insane to the population by decades. In every case except that of the Italians, we see a relative increase of the insane which is most marked in the Irish, English, and German.

Table VII*b* gives the percentage of nationalities among the insane by decades for Hartford and New Haven, with the percentage of nationalities in the total population for comparison. A study of the table reveals the following facts: Hartford has more native insane in proportion to the population than New Haven. There is a proportionate decrease in the percentage of native insane in the two cities in the decade of 1880–1890 over that of 1868–1880, also that of 1890–1900 over that of 1890–1900. There is the usual large proportion of Irish insane from the two cities.

TABLE VII.

VII*a*.

NATIONALITIES OF INSANE BY DECADES FOR ENTIRE STATE COMPARED WITH THE POPULATION.

One person insane to the following number of inhabitants:—

	Native.	Irish.	English.	French.	German.	Russian.	Swedes.	Italians.
1868–1880	544	200	336	359	265	—	521	293
1880–1890	344	117	187	292	222	1,463	316	480
1890–1900	307	174	312	303	180	326	329	868

VII*b*.

NATIONALITIES BY DECADES FOR HARTFORD AND NEW HAVEN COMPARED WITH POPULATION.

Hartford.

	Native.	Irish.	English.	French.	German.	Canadian.	Swedes.	Italians.
1868–1880.								
Insane	60.9%	34.1%	.8%	—	3.2%	—	—	.8%
Population	74.1	16.0	2.3	—	3.3	—	—	.2
1880–1890.								
Insane	51.1	36.7	.7	—	7.8	.1%	.3	.3
Population	75.1	14.7	2.5	.1%	4.1	1.5	.9	.6
1890–1900.								
Insane	51.0	29.0	2.8	.5	4.9	—	2.0	.5
Population *	—	—	—	—	—	1.0	—	—

* Omitted in last census report.

New Haven.

	Native.	Irish.	English.	French.	German.	Canadian.	Swedes.	Italians.
1868-1880								
Insane	56.2%	32.0%	2.6%	—	9.1%	—	—	—
Population	75.0	15.3	2.1	—	4.4	—	—	—
1880-1890								
Insane	48.6	32.4	4.5	.3	9.3	.6	.9	.3
Population	74.1	13.4	2.1	.1	5.6	1.1	.9	2.3
1890-1900								
Insane	56.0	20.1	1.9	.4	7.7	.4	1.4	2.9
Population	75.4	10.2	1.8	.1	4.6	1.2	1.3	5.1

Table VIII.

A comparison of Tables VIII^1 and VIII^2 reveals the following facts concerning the predominance of particular forms of psychoses in the given periods.

1. In the order of degree, the towns produced relatively more cases of neurasthenia, manic depressive insanity, and dementia præcox in the first period. In the cities there were more cases of neurasthenia, dementia præcox, dementia paralytica, and epilepsy.

2. In the next decade, in the order of predominance from the country are dementia paralytica, neurasthenia, and melancholia, while from the cities organic dementia and the relatively infrequent psychoses are alone above the average.

3. In the last decade, from the towns paranoia, imbecility, alcoholic insanity, senile dementia, and epilepsy are most in evidence. From the cities for the same period, paranoia, imbecility, senile dementia, neurasthenia, alcoholic insanity, and dementia paralytica predominate.

4. The first period marks few cases of paranoia, organic dementia, imbecility, and senile dementia from the towns, while from the cities there are relatively few cases of paranoia, organic dementia, senile dementia, and imbecility.

5. In the second period the towns show the smallest relative percentage of paranoia, imbecility, and alcoholic psy-

choses; and the cities show relatively few cases of neurasthenia and dementia paralytica.

6. In the last decade the towns present relatively few cases of neurasthenia and melancholia, while from the cities there are relatively few numbers of dementia præcox, epilepsy, and melancholia.

TABLE VIII.

PERCENTAGES OF TOTAL NUMBER OF PATIENTS SUFFERING FROM THE SAME PSYCHOSES IN DIFFERENT DECADES BY TOWNS AND CITIES TO BE COMPARED WITH TOTAL NUMBER OF INSANE IN DIFFERENT DECADES.

VIII^{1}.

	Towns.			Cities.		
	1868–1880.	1880–1890.	1890–1900.	1868–1880.	1880–1890.	1890–1900.
Dementia Præcox .	22.2%	36.2%	41.6%	19.0%	35.1%	45.5%
Manic Depressive .	25.6	31.6	43.2	16.0	36.1	46.9
Senile Dementia .	13.9	35.9	50.1	12.0	32.9	55.0
Alcoholic Insanity .	15.8	30.3	53.8	16.2	33.7	50.0
Dementia Paralytica	16.2	41.5	42.2	18.0	31.3	50.6
Melancholia . . .	21.1	39.7	39.1	16.1	38.1	45.6
Organic Dementia	11.6	36.4	51.9	8.4	40.0	51.5
Epileptic Insanity .	19.1	33.9	47.0	18.7	35.9	45.8
Paranoia	9.2	24.7	65.9	4.0	35.7	60.2
Neurasthenia . . .	33.3	40.0	26.6	30.7	15.3	53.8
Imbecility	13.1	29.5	57.3	12.6	30.5	56.8
Idiocy	—	—	—	—	10.0	—
Other Psychoses . .	32.1	31.2	36.6	21.9	43.8	34.2

VIII^{2}.

	Towns.			Cities.		
	1868–1880.	1880–1890.	1890–1900.	1868–1880.	1880–1890.	1890–1900.
Total Insane . . .	21.4%	36.1%	42.4%	16.9%	35.0%	48.0%

Table IX.

A comparison of the percentages of different psychoses from towns and cities is interesting in bringing into view some of the etiological factors concerned in the production

TABLE IX.

PERCENTAGE OF DIFFERENT PSYCHOSES BY DECADES FROM TOWNS AND CITIES.

	Towns.				Cities.			
	1868–1880.	1880–1890.	1890–1900.	Total Average. 1868–1900.	1868–1880.	1880–1890.	1890–1900.	Total Average. 1868–1900.
Dementia Præcox .	32.3%	30.3%	25.9%	28.7%	32.3%	28.5%	27.8%	29.3%
Manic Depressive .	28.1	20.8	21.6	22.6	21.3	23.0	21.4	22.5
Senile Dementia .	5.2	9.1	9.8	8.6	6.6	7.1	9.1	8.2
Alcoholic Insanity .	4.7	5.3	7.3	6.0	10.1	10.2	10.7	10.7
Dementia Paralytica	3.3	5.1	3.9	4.2	7.0	5.3	6.1	6.2
Melancholia . . .	9.1	9.8	7.6	8.7	7.6	9.1	8.5	8.4
Organic Dementia .	2.	3.7	4.7	3.8	2.6	3.6	3.6	3.5
Epileptic Insanity .	4.7	4.9	4.6	4.7	4.9	4.7	3.9	4.5
Paranoia	1.3	1.8	3.4	2.2	—	1.4	2.8	.3
Neurasthenia . . .	2.1	3.0	4.3	3.4	.5	.1	.4	2.4
Imbecility	2.1	2.9	4.3	3.4	2.0	2.0	2.7	.9
Other Psychoses . .	4.8	2.8	2.2	2.9	4.5	4.5	2.4	6.0

of insanity. A comparison of the tables under IX may lead to some conclusion in regard to these factors. Dementia præcox is slightly less predominant in the country than in the city; manic depressive insanity is especially marked in neither country nor city; senile dementia is more characteristic of the suburban population; alcoholic insanity is much more prominent in the city, where its average during the three decades is almost constant,— this is also true of dementia paralytica; melancholia is more prominent in the country; organic dementia is also slightly more predominant in the country; while paranoia, neurasthenia, and imbecility are markedly more prevalent in the country.

Table X.

Table X¹ when compared with that of X² gives us interesting data concerning the distribution of different forms of insanity by periods. The most important facts deduced are these: (1) Middlesex, New Haven, and Tolland Counties during the first decade show the largest relative percentage of dementia præcox cases from the towns. In the second decade Middlesex and Tolland lead in the number of this psychosis, while in the last decade Middlesex County alone gives more than its average of this psychosis. (2) Alcoholic insanity is largely represented from Fairfield, Hartford, and New Haven Counties, while New London, Hartford, and Fairfield Counties are productive of a proportionately larger number of cases of paralytic dementia.

A study of Table X[1] also reveals many facts in regard to the movement of the different psychoses in the several decades. (1) The increase of dementia præcox in Windham and Hartford Counties and the decided decrease in Tolland, New Haven, and Middlesex Counties is shown. (2) Manic depressive insanity shows a marked decrease in Tolland, New Haven, New London, and Middlesex Counties, with a slight increase in Hartford County. It is also a noteworthy fact that it had its greatest prevalence in Litchfield, Windham, Hartford, and Middlesex Counties in the middle decade.

Senile dementia shows an increase in Fairfield, Litchfield, Windham, Hartford, and New London Counties, while in Tolland and Middlesex Counties there is a decrease in this form of insanity.

TABLE X[1].

PERCENTAGE OF PSYCHOSES FROM TOWNS BY COUNTIES AND DECADES.

	Fairfield.	Litchfield.	Windham.	Tolland.	Hartford.	New Haven.	New London.	Middlesex.
Dementia Præcox:								
1868–1880	12.9%	9.5%	3.7%	7.5%	15.4%	12.9%	10.8%	12.9%
1880–1890	11.7	11.9	7.2	6.2	18.4	11.1	10.4	8.3
1890–1900	11.3	9.6	6.8	4.9	24.0	9.6	9.1	6.3
Manic Depressive Insanity:								
1868–1880	11.0	11.4	4.3	6.2	12.4	16.2	14.3	11.9
1880–1890	10.9	16.0	7.5	6.0	19.3	11.7	9.0	12.1
1890–1900	16.3	12.1	5.6	1.9	16.3	11.0	6.7	9.6
Senile Dementia:								
1868–1880	5.2	10.5	5.2	7.8	10.5	10.5	2.6	28.9
1880–1890	11.2	11.2	4.3	4.3	27.5	19.7	2.5	16.3
1890–1900	13.1	11.8	6.8	5.6	29.3	10.0	6.2	7.5
Alcoholic Insanity:								
1868–1880	5.7	8.5	—	5.7	28.5	11.4	5.7	22.8
1880–1890	13.4	2.9	2.9	5.9	22.3	13.4	5.9	8.9
1890–1900	13.3	11.6	3.3	5.0	15.0	10.8	5.8	7.5
Dementia Paralytica:								
1868–1880	12.0	—	8.0	4.0	24.0	12.0	16.0	8.0
1880–1890	13.8	4.6	10.7	6.1	20.0	1.3	10.7	4.6
1890–1900	17.1	12.5	7.8	4.6	9.3	3.1	14.0	3.1
Melancholia:								
1868–1880	13.2	14.7	2.9	5.8	19.1	22.0	10.2	8.8
1880–1890	9.5	14.2	4.7	7.1	10.3	18.2	12.6	9.5
1890–1900	13.9	17.3	9.5	1.7	20.8	17.3	7.8	8.6
Organic Dementia:								
1868–1880	—	6.6	—	13.3	—	6.6	20.0	20.0
1880–1890	10.6	10.6	4.2	6.3	2.1	6.3	6.3	10.6
1890–1900	11.6	7.7	5.1	2.5	1.2	25.9	5.1	6.2
Epileptic Insanity:								
1868–1880	8.5	8.5	11.4	14.2	17.1	8.5	5.71	8.5
1880–1890	17.4	12.6	7.9	4.7	14.2	14.2	1.5	14.2
1890–1900	10.7	24.6	7.6	6.1	24.6	7.6	15.3	9.0
Paranoia:								
1868–1880	—	20.0	—	—	20.0	20.0	10.0	20.0
1880–1890	4.1	8.3	16.6	16.6	8.3	25.0	—	8.3
1890–1900	5.6	16.9	1.8	9.4	32.0	15.0	—	3.7
Neurasthenia:								
1868–1880	—	50.0	—	—	16.6	16.6	—	—
1880–1890	—	—	16.6	16.6	—	16.6	—	16.6
1890–1900	—	40.0	—	—	—	40.0	—	—
Imbecility:								
1868–1880	18.7	—	18.7	6.2	18.7	—	18.7	12.5
1880–1890	10.5	13.1	7.8	2.6	21.0	5.2	13.1	10.5
1890–1900	25.5	5.6	9.8	2.8	8.4	12.6	15.4	9.8
Other Psychoses:								
1868–1880	16.2	10.8	10.8	2.7	29.7	13.5	—	10.8
1880–1890	11.3	9.0	2.2	4.5	43.1	11.3	2.2	11.3
1890–1900	5.7	12.5	5.0	2.5	25.0	20.0	2.5	17.5

TABLE X^2.

PERCENTAGE OF POPULATION OF TOWNS BY COUNTIES AND DECADES.

Population.	Fairfield.	Litchfield.	Windham.	Tolland.	Hartford.	New Haven.	New London.	Middlesex.
1880	13.5%	15.3%	11.1%	7.0%	20.9%	12.8%	12.2%	7.0%
1890	14.4	15.0	10.9	7.0	20.9	14.0	11.2	6.9
1900	13.9	16.0	9.9	6.2	22.0	15.3	10.2	6.1

Alcoholic insanity is increased in Fairfield, Litchfield, Windham, and New London Counties, but is decreased in Tolland, Hartford, New Haven, and Middlesex Counties.

Dementia paralytica is increased in Fairfield and Litchfield Counties, but is decreased remarkably in most of the other counties.

Melancholia shows an increase in Fairfield, Litchfield, Windham, and Hartford Counties, a decrease in the other counties.

Similar deductions can be made concerning the other psychoses.

Table XI.

Table XI combines the figures of Table X and gives the percentage of each psychosis from the different counties for the whole period. By comparing the figures of each psychosis with those of the population for the same county the differences in regard to the distribution of the psychoses for the whole period are seen.

1. Litchfield and Windham Counties show relatively very few cases of dementia præcox.

2. Windham County is relatively very low in all psychoses except imbecility and epilepsy.

3. Manic depressive insanity is quite evenly distributed throughout the State.

4. Senile dementia is most frequent in Middlesex and less frequent in New London County.

5. Litchfield, Windham, and New London Counties are comparatively free from alcoholic insanity.

6. Dementia paralytica is most abundant in Fairfield and

New London Counties, and relatively free from Litchfield, Tolland, and New Haven Counties.

7. Melancholia is less predominant in Windham and Tolland Counties.

Similar deductions may be made in regard to the other psychoses.

TABLE XI.

PERCENTAGE OF EACH PSYCHOSIS FROM TOWNS BY COUNTIES FOR WHOLE PERIOD.

(*To be compared with Average County Population.*)

1868–1900.	Fairfield.	Litchfield.	Windham.	Tolland.	Hartford.	New Haven.	New London.	Middlesex.
Dementia Præcox .	11.9%	10.4%	5.9%	6.2%	19.3%	11.2%	10.1%	9.2%
Manic depressive Ins'ty	12.7	13.2	5.8	4.7	16.0	13.0	10.0	11.2
Senile Dementia . .	9.8	11.2	5.4	5.9	22.4	13.4	3.8	17.6
Alcoholic Insanity .	10.8	7.7	2.1	5.5	21.8	11.8	5.8	13.2
Dementia Paralytica	14.3	5.7	8.3	4.9	17.8	5.5	13.6	5.2
Melancholia	12.2	15.4	5.7	4.9	16.7	19.2	10.2	9.0
Organic Dementia .	7.4	8.3	3.1	7.4	1.1	13.0	10.5	12.2
Epileptic Insanity .	12.2	15.2	9.0	8.3	18.6	10.1	9.5	10.6
Paranoia	3.2	15.1	6.1	8.6	20.1	20.0	3.3	10.7
Neurasthenia . . .	—	30.0	5.5	5.5	5.5	24.4	—	5.5
Imbecility	18.2	6.2	12.1	3.8	16.0	5.9	15.7	10.9
Other Psychoses . .	1.6	10.8	6.0	3.2	32.6	34.9	1.5	13.2
Aver. Co. Population	13.9%	15.4%	10.6%	6.7%	21.2%	14.0%	11.2%	6.6%

Table XII.

Table XII*a* gives the percentage of the various mental diseases from the cities for the whole period, also the percentage of the average population of the different cities for comparison. Hartford, Middletown, and New Haven are the leaders in nearly every psychosis. Alcoholic insanity, dementia paralytica, and neurasthenia show a very large relative percentage from Hartford, while from New Haven paranoia, imbecility, dementia paralytica, and manic dedepressive insanity are especially predominant.

Another interesting fact is apparent in the table; viz., that, where alcoholism and paralytic dementia are most prevalent, imbecility shows the largest percentage.

Table XII*b* shows a comparison of the different psychoses from county and city, pointing out those psychoses which are most prevalent in each. The towns show much larger percentages of dementia præcox, manic depressive insanity, senile dementia, melancholia, epileptic insanity, and imbecility, while the cities furnish a larger majority of alcoholic insanity and dementia paralytica.

TABLE XII.

PERCENTAGES OF VARIOUS PSYCHOSES FROM EACH CITY FOR WHOLE PERIOD COMPARED WITH AVERAGE POPULATION OF EACH CITY, ALSO TOTAL PSYCHOSES OF CITIES COMPARED WITH THOSE OF THE TOWNS.

XII*a*.

	Dementia Præcox.	Manic Depressive Insanity.	Senile Dementia.	Alcoholic Insanity.	Dementia Paralytica.	Melancholia.	Organic Dementia.	Epileptic. Insanity.	Paranoia.	Neurasthenia	Imbecility.	Other Psychoses.	Average Population.
Ansonia . .	1.5%	1.3%	.6%	1.4%	.8%	1.1%	.7%	1.0%	2.0%	—	1.0%	2.0%	2.0%
Bridgeport .	8.2	9.8	7.3	8.6	10.7	10.0	9.2	12.5	8.1	—	8.4	6.8	12.6
Danbury . .	4.0	4.5	4.6	3.5	4.7	2.5	5.3	4.6	1.0	7.6	6.3	2.0	14.0
Derby . . .	2.2	3.5	2.1	1.4	2.1	2.2	3.0	2.6	1.0	15.3	1.0	—	2.1
Hartford . .	21.4	15.2	15.3	22.9	20.1	20.6	17.6	15.1	19.2	23.0	15.7	22.4	14.7
Meriden . .	4.8	6.5	7.0	4.5	6.8	9.1	5.3	7.2	4.0	15.3	4.2	4.7	6.1
Middletown	4.7	6.3	12.3	11.9	3.4	4.7	10.0	10.4	7.1	7.6	6.3	8.8	3.7
New Britain	4.2	5.5	5.5	4.5	4.7	5.5	6.9	2.0	5.1	—	5.2	4.7	4.9
New Haven	23.4	24.4	15.3	19.1	25.3	20.0	16.9	20.3	28.5	23.0	27.3	25.1	21.6
New London	3.9	3.7	3.6	2.8	6.4	3.6	2.3	3.1	3.0	—	3.1	.6	3.5
Norwalk . .	3.5	2.2	4.0	1.9	1.7	3.6	2.3	2.6	4.0	—	4.2	2.7	4.4
Norwich . .	5.8	4.7	11.3	4.7	2.5	7.7	8.4	7.2	7.1	—	1.0	5.4	5.8
Putnam . .	.9	1.0	.3	—	.4	1.1	—	2.6	2.0	7.6	1.0	2.7	1.6
Stamford .	2.8	3.6	3.3	1.1	1.7	4.4	5.3	1.0	1.0	—	4.2	2.7	3.8
Waterbury .	8.8	6.2	6.4	10.7	7.2	3.0	5.3	6.2	5.1	—	9.4	8.1	8.8

XII*b*.

	Dementia Præcox.	Manic Depressive Insanity.	Senile Dementia.	Alcoholic Insanity.	Dementia Paralytica.	Melancholia.	Organic Dementia.	Epileptic Insanity.	Paranoia.	Neurasthenia.	Imbecility.	Other Psychoses.	Average Population.
Total Cities	28.9%	21.9%	7.2%	10.2%	5.6%	8.7%	3.1%	4.6%	2.3	.3	2.3	3.5	51.6
Total Towns	29.9	23.3	9.1	6.1	4.3	9.0	3.6	5.1	2.4	.4	3.4	3.1	48.4

Table XIII.

Table XIII gives the percentages of each nationality from the towns and cities by periods for each psychosis. The more important points disclosed by these tables are as follows: (1) the native cases of dementia præcox from the towns are relatively much larger than those from the cities for each period: the average percentage from the towns is approximately 68, that of the cities is 53. (2) The majority of the dementia præcox Irish for each of the periods is from the cities. (3) The natives are much more largely represented in manic depressive insanity by the towns, while the Irish, as in dementia præcox, come more largely from the cities. This is largely true of all the other nationalities in each of the psychoses. (4) Senile dementia among the natives is largely a product of the suburban population; this is especially characteristic in the third decade. The towns in this decade furnish 66.2 per cent. of the native cases of senile dementia, while the cities furnished only 38.7 per cent. The Irish in this decade furnished 44.3 per cent. of the cases of senility from the cities. Another striking fact in regard to senile dementia among the Irish is the great increase in the percentage in the last period: whereas in the period from 1868–1880 the Irish furnished in the towns only 5 per cent. of the seniles, and in the cities only 22.9 per cent., they furnished in the last decade 26.8 per cent. and 44.3 per cent. for the towns and cities respectively. (5) A comparison of this table with Table XIII² shows a relatively large percentage of dementia præcox cases from the cities. (6) Alcoholic insanity among the natives is relatively infrequent in the towns, while the Irish, on the other hand, from both towns, and cities, furnish a very large proportion of this psychosis. (7) Dementia paralytica is quite infrequent among both the native and the Irish in towns and cities, but is very prevalent among the English and Germans. Melancholia is largely represented by the Irish both from the towns and cities. The Swedes, also, in the last decade, show a relatively large percentage of this psychosis. (8) Paranoia is largely a psychosis of the native and Irish, though the Germans and Swedes are represented to a large extent. (9) Epileptic insanity comes largely from the native population. The Irish are particularly free from this form of psychosis. (10) Neurasthenia is practically a psychosis of the native and English.

TABLE XIII[1].

PERCENTAGE OF NATIONALITIES IN DIFFERENT PSYCHOSES BY DECADES FROM TOWNS AND CITIES.

	Towns.			Cities.		
	1868–1880.	1880–1890.	1890–1900.	1868–1880.	1880–1890.	1890–1900.
Dementia Præcox:						
Native	66.2%	66.1%	71.2%	54.0%	50.5%	55.7%
Irish	23.3	20.8	11.3	37.7	33.4	21.8
English	3.3	1.0	2.4	.4	4.5	2.0
German	2.5	3.1	3.0	5.1	5.0	7.7
Italian	.4	1.0	1.4	.4	—	1.8
Swedes	1.0	2.0	4.9	—	1.5	3.1
French	.4	.5	.2	.4	.2	.5
Canadian	.8	2.0	1.8	.4	1.2	1.4
All Others	1.2	3.1	3.5	1.2	2.8	5.5
Manic Depressive Insanity:						
Native	66.0	66.6	67.9	59.0	56.4	52.0
Irish	23.4	16.2	9.3	28.5	35.5	20.6
English	3.8	3.7	4.8	1.9	5.3	4.3
German	4.3	4.5	3.9	8.4	7.8	7.9
Italian	—	.7	2.2	.6	.9	1.2
Swedes	.9	3.0	3.9	—	.6	3.3
French	—	.7	.8	.6	—	.2
Canadian	.4	1.8	1.4	—	.9	2.6
All Others	.9	2.2	5.3	.6	2.2	7.6
Senile Dementia:						
Native	84.6	69.8	66.2	64.6	57.1	38.7
Irish	5.0	17.1	26.8	22.9	24.4	44.3
English	2.5	3.4	4.3	4.1	7.1	3.9
German	—	3.4	1.8	2.	4.	7.3
Italian	—	—	—	—	1.	1.1
Swedes	—	.8	—	—	—	—
French	—	—	—	—	—	—
Canadians	2.5	—	—	6.2	2.	2.2
All Others	5.0	5.1	.6	—	4.	2.2

TABLE XIII[1].— *Continued.*

	Towns.			Cities.		
	1868–1880.	1880–1890.	1890–1900.	1868–1880.	1880–1890.	1890–1900.
Alcoholic Insanity:						
Native	60.0	47.7	58.3	63.0	43.9	57.8
Irish	28.6	40.2	26.6	27.3	40.4	29.1
English	5.7	4.4	3.3	8.2	2.1	1.4
German	—	1.4	3.3	1.3	9.2	5.2
Italian	—	—	1.6	—	.7	.9
Swedes	—	2.9	—	—	—	—
French	—	1.4	—	—	—	.4
Canadian	—	1.4	4.1	—	2.1	3.8
All Others	5.7	—	2.5	—	1.4	.9
Dementia Paralytica:						
Native	52.0	73.8	65.6	56.8	55.4	62.5
Irish	27.9	12.3	15.6	13.7	21.6	13.3
English	7.9	1.5	4.6	9.8	1.3	2.5
German	12.0	4.6	1.5	3.9	10.8	8.3
Italian	—	—	3.1	—	2.7	.8
Swedes	—	1.5	1.5	—	—	.8
French	—	—	—	—	—	—
Canadian	—	3.0	4.6	—	—	4.1
All Others	—	3.0	3.1	15.6	8.1	7.5
Melancholia:						
Native	76.4	62.6	53.0	60.0	47.6	43.1
Irish	17.6	28.5	20.8	30.8	31.7	30.5
English	2.9	3.9	1.7	1.8	8.	7.7
German	1.4	2.3	7.8	5.4	8.7	9.5
Italian	—	—	.8	—	—	.6
Swedes	—	—	10.4	—	1.5	2.3
French	—	—	1.7	—	.8	1.1
Canadian	—	—	2.6	—	.8	2.3
All Others	1.4	2.3	.8	1.8	.8	2.3
Organic Dementia:						
Native	73.3	63.8	53.2	52.6	50.0	50.0
Irish	20.0	25.5	20.7	15.6	28.	27.1
English	—	—	2.5	5.2	10.	11.4
German	6.6	6.3	5.1	—	6.	8.5
Italian	—	—	—	—	—	1.4
Swedes	—	2.1	1.2	—	—	—
French	—	—	—	—	4.	—
Canadian	—	2.1	2.5	—	2.	—
All Others	—	2.1	14.2	26.5	—	1.4
Epileptic Insanity:						
Native	80.0	85.7	76.9	63.8	72.7	71.4
Irish	8.5	4.7	9.2	16.6	22.7	10.4
English	—	4.7	4.6	11.1	3.0	6.5
German	8.5	1.5	6.1	5.5	—	1.3
Italian	—	—	—	—	—	1.3
Swedes	—	1.5	—	—	—	1.3

TABLE XIII[1].—*Continued.*

	Towns.			Cities.		
	1868–1880.	1880–1890.	1890–1900.	1866–1880.	1880–1890.	1890–1900.
Epileptic Insanity: (*Continued*)						
French	—	—	—	—	—	—
Canadian	—	—	3.0	2.7	1.5	1.3
All Others	2.8	1.5	—	—	—	6.5
Paranoia:						
Native	80.0	50.0	67.9	100.0	35.0	52.6
Irish	20.0	29.1	15.0	—	40.	31.5
English	—	—	3.7	—	10.	1.7
German	—	8.3	7.5	—	15.	5.2
Italian	—	—	—	—	—	—
Swedes	—	4.1	3.7	—	—	1.7
French	—	—	—	—	—	1.7
Canadian	—	—	1.8	—	—	3.4
All Others	—	8.3	—	—	—	1.7
Neurasthenia:						
Native	83.3	83.3	80.0	100.0	100.0	71.4
Irish	—	—	—	—	—	14.2
English	—	16.6	20.0	—	—	—
German	—	—	—	—	—	14.2
Italian	—	—	—	—	—	—
Swedes	—	—	—	—	—	—
French	—	—	—	—	—	—
Canadian	—	—	—	—	—	—
All Others	16.6	—	—	—	—	—
Imbecility:						
Native	68.7	84.2	92.9	80.0	85.7	86.8
Irish	25.	5.2	2.8	20.0	7.1	9.4
English	6.2	5.2	1.4	—	3.5	—
German	—	—	—	—	3.5	—
Italian	—	—	1.4	—	—	—
Swedes	—	—	—	—	—	—
French	—	—	—	—	—	—
Canadian	—	—	1.4	—	—	—
All Others	—	5.2	—	—	—	3.7
Other Psychoses:						
Native	67.5	75.0	77.5	51.5	51.6	40.4
Irish	16.2	13.6	7.5	30.3	14.5	19.1
English	8.1	2.2	2.5	3.0	4.8	—
German	2.7	—	5.0	6.	8.	10.6
Italian	—	—	—	—	—	—
Swedes	—	2.2	2.5	—	3.2	2.1
French	—	—	—	—	—	2.1
Canadian	—	—	5.0	—	1.6	6.3
All Others	5.4	6.8	—	9.	16.1	19.0

TABLE XIII^2.

PERCENTAGE OF INSANE FROM TOWNS AND CITIES BY DECADES.

	Towns.			Cities.		
	1868–1880.	1880–1890.	1890–1900.	1868–1880.	1880–1890.	1890–1900.
Ireland . . .	20.6%	19.4%	15.0%	29.4%	29.4%	23.6%
England . .	3.5	3.6	3.1	2.9	4.5	3.5
France . . .	.1	.2	.2	.3	.3	.4
Germany . .	3.1	3.5	4.	5.2	6.5	7.0
Russia . . .	.0	.0	1.	.1	.2	1.8
Sweden . . .	.5	2.0	3.6	.0	.8	2.0
Italy	.1	.4	1.2	.5	.7	1.1
Other Nations	2.9	3.3	4.9	2.4	2.3	5.1
Total Foreign	31.0	32.6	33.1	41.0	44.9	44.5
Natives . . .	69.0	67.3	66.8	58.9	55.1	45.4

Table XIV.

A comparison of Table XIV^1 with XIV^2 reveals the following facts:—

1. Dementia præcox is less prevalent among the English and Germans both in the cities and towns, while a large percentage of the Italians, Swedes, and French belong to this psychosis.

2. The Irish and the Canadians are less prone to the manic depressive type of insanity. The natives, Germans, Italians, Swedes, and French are especially prone to this form of insanity.

3. Senile dementia is comparatively more prominent among the Irish and English, and less prominent among the other nationalities.

4. Alcoholic insanity occurs more frequently among the Irish and Canadians, less frequently among the natives and other nationalities.

5. Dementia paralytica is a mental disease most frequent among the English, Germans, Italians, and Canadians. The Irish, Swedes, and French are notably free from this psychosis.

6. Melancholia is remarkably frequent among the foreign population, except the Italians and Canadians, which are somewhat below the average in this psychosis.

7. Paranoia and imbecility are largely psychoses of the country, the former being most represented by the natives, Irish, Germans, and Swedes.

TABLE XIV.

Percentage of Each Nationality in Each Psychosis by Towns and Cities for Whole Period.

XIV¹.

	Native.	Irish.	English.	German.	Italian.	Swedes.	French.	Canadian.	Others.
Dementia Præcox:									
Town	29.9%	29.5%	19.2%	25.6%	40.7%	40.2%	33.3%	33.9%	29.1%
City	28.3	31.2	18.5	28.0	34.3	45.0	33.3	20.5	27.3
Manic Depressive Insanity:									
Town	23.1	20.0	21.9	28.9	37.0	29.2	41.6	20.7	26.2
City	22.0	19.5	23.4	26.1	28.1	31.3	13.3	20.5	24.8
Senile Dementia:									
Town	9.2	10.4	10.5	5.7	—	1.2	—	1.8	7.7
City	7.0	10.5	9.8	6.6	9.3	—	—	13.2	4.9
Alcoholic Insanity:									
Town	5.1	11.0	7.8	4.1	7.4	2.4	8.3	11.3	4.8
City	10.3	12.8	7.4	9.2	9.3	—	6.6	16.1	2.4
Dementia Paralytica:									
Town	4.3	4.0	5.2	5.7	7.4	2.4	—	9.4	3.8
City	6.5	3.6	5.5	7.3	9.3	1.9	—	7.3	14.2
Melancholia:									
Town	8.0	11.5	7.8	11.5	3.7	14.6	16.6	5.6	4.8
City	7.4	10.0	14.8	11.0	3.1	11.7	20.	7.3	3.7
Organic Dementia:									
Town	3.4	4.8	1.7	6.6	—	2.4	—	5.6	11.6
City	3.1	3.3	8.6	3.3	3.1	—	13.	1.4	3.7
Epileptic Insanity:									
Town	5.5	1.9	5.2	6.6	—	1.2	—	3.7	1.9
City	5.7	2.6	6.7	1.1	3.1	1.9	—	4.4	3.1
Paranoia:									
Town	2.3	2.7	1.7	4.1	—	3.6	—	1.8	1.9
City	1.9	2.4	1.8	2.2	—	1.9	6.6	2.9	.6
Neurasthenia:									
Town	.5	—	1.7	—	—	—	—	—	.9
City	.4	.1	—	.3	—	—	—	—	—
Imbecility:									
Town	4.5	1.2	3.5	—	3.7	—	—	1.8	1.9
City	3.7	.9	.6	.3	—	—	—	—	1.2
Other Psychoses:									
Town	3.3	2.4	4.3	2.4	—	2.4	—	3.7	4.8
City	3.0	2.5	2.4	4.4	—	5.8	6.6	5.8	13.6

XIV^{2}.

PERCENTAGE OF EACH PSYCHOSIS FROM TOWNS AND CITIES FOR WHOLE PERIOD.

	Towns.	Cities.
Dementia Praecox	28.7%	29.3%
Manic Depressive Insanity . . .	22.6	22.5
Senile Dementia	8.6	8.2
Alcoholic Insanity	6.0	10.7
Dementia Paralytica	4.2	6.2
Melancholia	8.7	8.4
Organic Dementia	3.8	3.5
Epilepsy	4.7	4.5
Paranoia	2.2	.3
Neurasthenia	3.4	2.4
Imbecility	3.4	.9
Other Psychoses	2.9	6.0

Table XV.

Table XV gives the ages at which the different psychoses are prone to appear. The entire range of the age at which dementia praecox appears in different individuals is from ten to fifty years, although the great majority, nearly 80 per cent. of those suffering from this mental disease, have the psychosis between twenty and forty. The largest number, nearly 50 per cent., are afflicted first between the ages of twenty and thirty.

Manic depressive insanity and epilepsy have the widest range of onset. The range of the former is from ten to seventy years. The largest percentage of cases, approximately 80 per cent., however, have an onset between the years twenty to fifty. The range of epilepsy is from one to seventy, the largest percentage of cases having an onset between ten and forty.

Alcoholic insanity occurs between the ages twenty and seventy, the onset of the greatest number of cases being between thirty and forty. This psychosis appears relatively later in the towns than in the cities.

Senile dementia occurs most frequently between the ages of sixty and seventy in the country, and seventy and eighty in the city.

Dementia paralytica appears most frequently between the ages of forty and fifty.

Melancholia is most frequent between the ages forty and fifty.

Paranoia makes its appearance earlier in the country than in the city, and is most frequent between the ages of thirty and forty.

TABLE XV.

AGES AT WHICH THE DIFFERENT PSYCHOSES ARE MOST PRONE TO APPEAR.

Years of Age.	1–10.	10–20.	20–30.	30–40.	40–50.	50–60.	60–70.	70–80.	80–80.
Dementia Præcox:									
Town	—	11.0%	47.6%	32.3%	8.2%	1.5%	—	—	—
City	—	11.4	49.3	30.4	7.7	1.0	—	—	—
Manic Depressive Insanity:									
Town	—	8.1	30.7	28.8	19.4	7.7	4.1%	.9	—
City	—	11.7	33.1	28.5	16.3	6.7	2.7	.5	—
Alcoholic Insanity:									
Town	—	—	19.9	31.7	25.3	17.6	5.4	—	—
City	—	—	24.2	37.4	24.5	8.3	5.3	—	—
Senile Dementia:									
Town	—	—	—	—	—	13.0	40.7	36.0	9.6
City	—	—	—	—	1.8	14.2	36.7	38.6	8.5
Dementia Paralytica:									
Town	—	—	5.1	37.6	40.4	15.4	1.9	—	—
City	—	—	7.1	33.9	41.9	13.8	2.6	—	—
Melancholia:									
Town	—	—	—	9.1	46.5	32.6	11.7	—	—
City	—	—	—	11.0	47.9	30.2	10.7	—	—
Organic Dementia:									
Town	—	—	12.9	9.6	19.4	37.1	20.9	—	—
City	—	—	12.3	11.5	20.0	20.7	22.3	9.2	3.8
Epileptic Insanity:									
Town	13.8%	21.7	23.8	17.5	11.6	8.9	2.6	—	—
City	11.1	23.2	28.0	19.5	8.4	5.8	3.6	—	—
Paranoia:									
Town	—	1.1	13.9	37.2	26.7	14.	8.0	—	—
City	—	—	8.3	38.5	31.2	15.6	6.2	—	—

TABLE XVI.

DURATION OF MENTAL DISEASES OF PATIENTS WHO HAVE DIED IN THE INSTITUTION.

Duration.	Dementia Præcox.			Duration.	Dementia Paralytica.		Senile Dementia.		Melancholia.	
1 year	28 cases		7.3%	Under 1 year	33 cases	10.9%	44 cases	9.4%	31 cases	15.9%
2 years	20 "		5.2	1 year	84 "	27.9	72 "	15.4	29 "	14.9
3 "	26 "		6.8	2 years	73 "	24.2	83 "	17.8	30 "	15.4
4 "	22 "		5.7	3 "	55 "	18.2	75 "	16.1	16 "	8.2
5 "	21 "		5.4	4 "	14 "	4.6	44 "	9.4	10 "	5.1
6 "	29 "		7.5	5 "	13 "	4.3	34 "	7.2	10 "	5.1
7 "	17 "		4.4	Over 6 "	29 "	9.6	24 "	5.1	6 "	3.1
8 "	16 "		4.1	7 "			14 "	3.	8 "	4.1
9 "	8 "		2.1	8 "			19 "	4.1	6 "	3.1
10 "	16 "		4.1	Over 9 "			57 "	12.2	48 "	24.7
		52.6								
11 "	14 "		3.6							
12 "	17 "		4.4							
13 "	16 "		4.1							
14 "	12 "		3.1							
15 "	10 "		2.6							
16 "	12 "		3.1							
17 "	8 "		2.1							
18 "	9 "		2.3							
19 "	6 "		1.5							
20 "	7 "		1.8							
		28.6								
21 "	6 "		1.5							
22 "	8 "		2.1							
23 "	5 "		1.3							
24 "	4 "		1.0							
25 "	4 "		1.0							
26 "	0 "		—							
27 "	4 "		1.0							
28 "	3 "		.7							
29 "	3 "		.7							
30+ "	31 "		8.1							
Total	382 cases				301 cases		466 cases		194 cases	

Table XVI.

Table XVI gives the relative duration of the four most important mental diseases. The figures include only those cases which have died in the institution, and of the cases of dementia præcox entering the institution from 1868–1900, approximately 17.2 per cent. have died in the institution; of the cases of paralytica dementia, 75.6 per cent.; of senile dementia, 72.4 per cent.; and of the cases of melancholia, 29.8 per cent. (1) Of the cases of dementia præcox 52.6 per cent. have died before the psychosis had a duration of ten years. (2) 81.2 per cent. of the cases of dementia paralytica had a course of four years or less. (3) Only 75.3 per cent. of the senile cases died within five years,* and (4) nearly 50 per cent. of the cases of melancholia died within two years.

Table XVII.

Table XVII shows in general the relation of heredity to the different forms of insanity and gives the hereditary factors at the different ages of onset of the mental diseases. The table is worthy of considerable study, and only a few facts will be selected for this general survey. (1) Manic depressive insanity shows the highest percentage of hereditary cases, 49.9 per cent.; paranoia and dementia præcox follow with 44.6 and 42.5 per cent. respectively. (2) Organic dementia and alcoholic psychoses represent the lowest hereditary psychoses.

A more careful study of the table reveals the interesting fact that the hereditary influences are greatest at the age when the psychoses are most prone to appear. To illustrate this, the diagrams following Table XVII have been prepared. In these diagrams the ordinates represent the ages of onset of the mental diseases, and the abscissas the percentages of hereditary cases. The white in a similar manner represents the number of cases having their onsets at the different ages.

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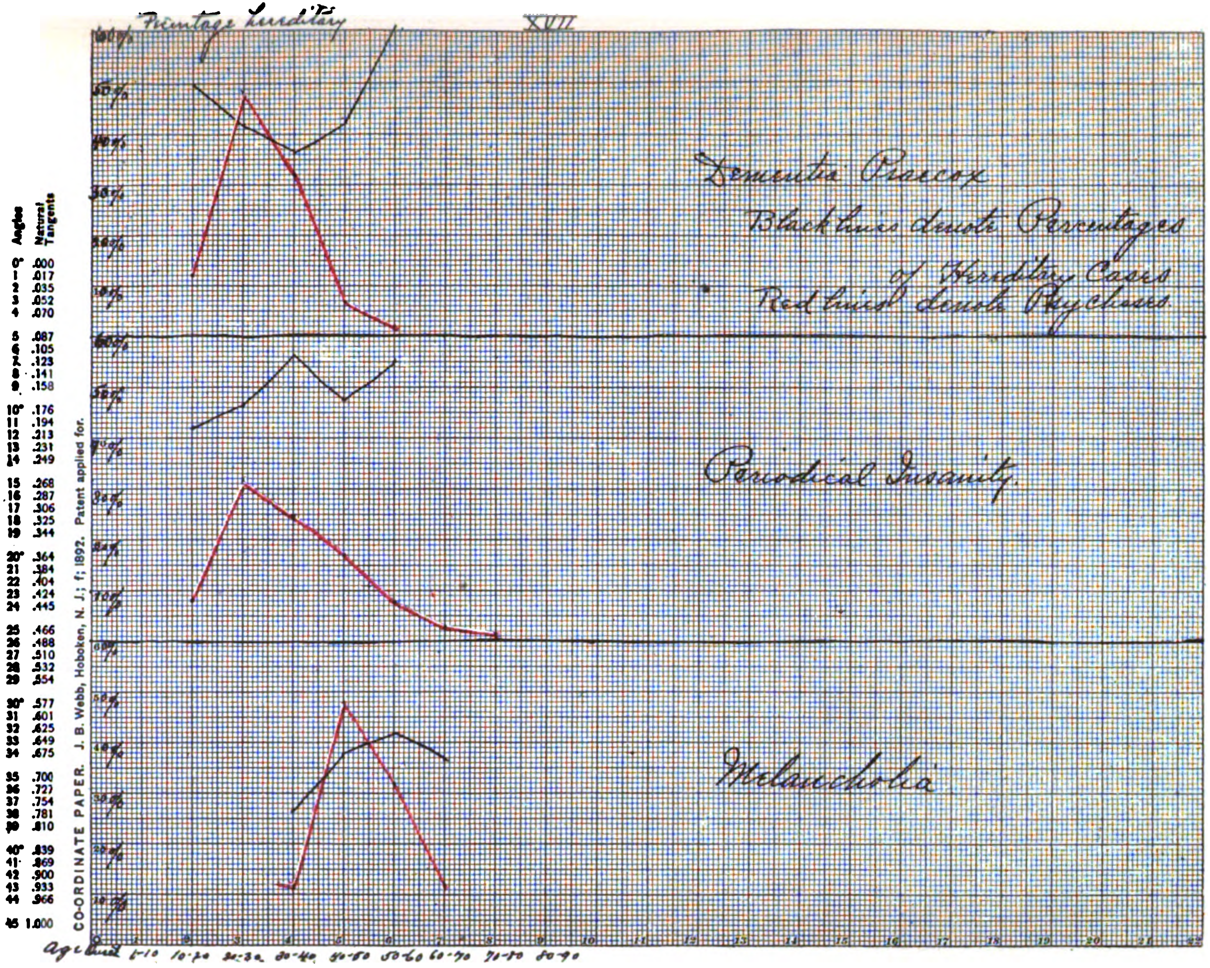
* Senile cases as classified in the tables include also pre-senile dementia.

TABLE XVII.

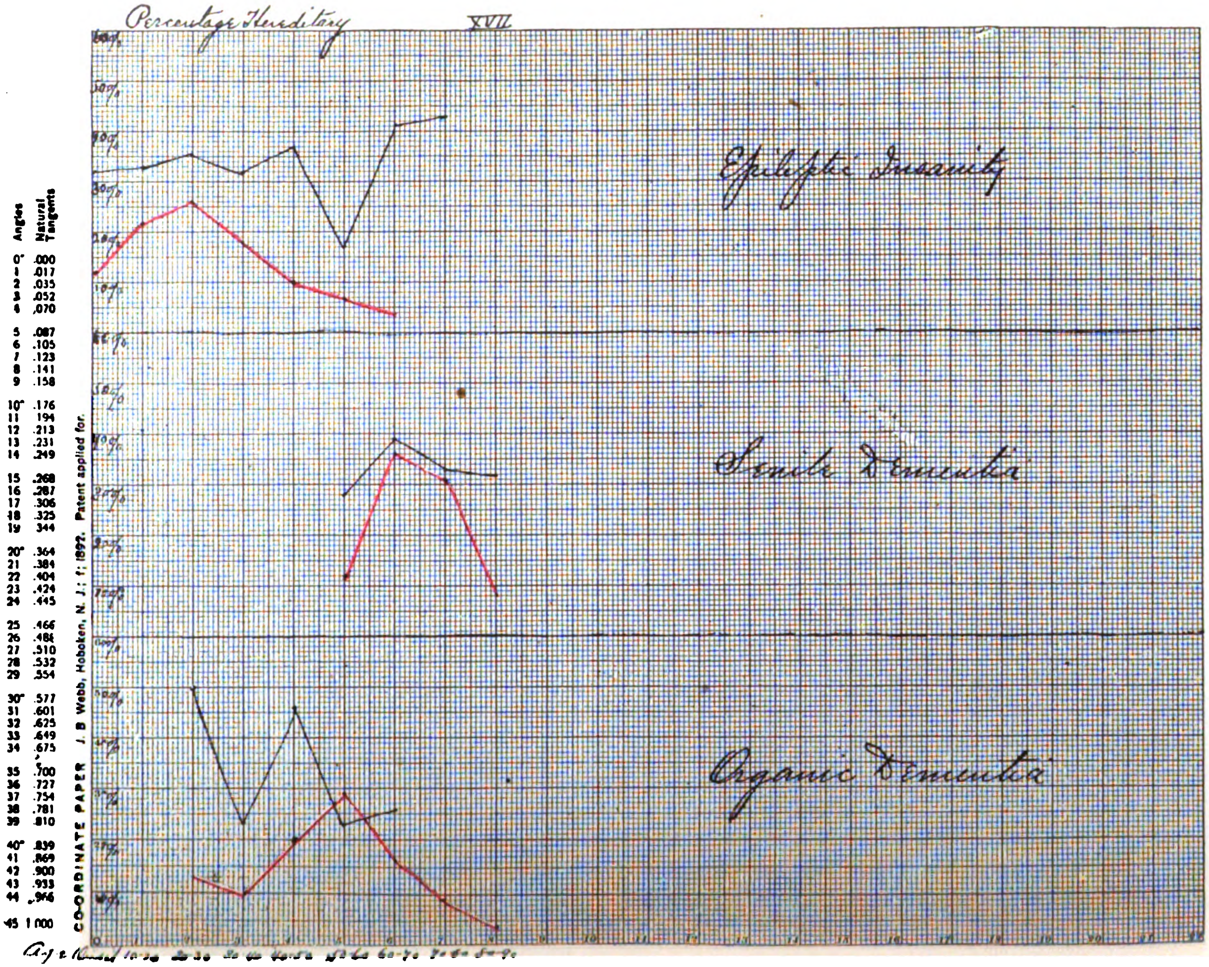
HEREDITY IN RELATION TO THE DIFFERENT PSYCHOSES.

Age of Onset.		Dementia Præcox.		Manic Depressive.		Alcoholic.		Senile Dementia.		Dementia Paralytica.		Melancholia.		Organic Dementia.		Epileptic.		Paranoia.	
		No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.
1–10 Hereditary	+															14	33.3		
Non-hereditary	—															28			
10–20	+	92	49.7	59	42.4											21	35.6		
	—	93		80												38			
20–30	+	297	42.0	177	46.3	34	40.0			2	18.1			7	50.0	16	32.0	6	50.0
	—	410		205		51				9				7		34		6	
30–40	+	135	36.3	181	56.5	45	34.0			22	31.8	10	26.3	4	23.3	14	36.8	24	48.9
	—	237		139		87				47		28		11		24		25	
40–50	+	37	42.5	80	47.6	25	27.7			32	36.3	90	37.9	14	46.6	4	17.4	13	39.4
	—	40		88		65				56		147		16		19		20	
50–60	+	32	62.8	70	55.1	11	25.6	17	27.8	15	36.5	61	41.5	11	22.9	7	41.1	9	47.3
	—	13		57		32		44		26		86		37		10		10	
60–70	+					2	13.3	58	39.4			19	36.5	9	25.7	3	42.8	2	25.0
	—					13		89				33		26		4		6	
70–80	+							48	32.8										
	—							98											
80–90	+							7	31.8										
	—							15											
Total Heredity		42.5%		40.9%		32.0%		34.5%		34.4%		37.9%		31.7%		33.8%		44.6%	

XVII

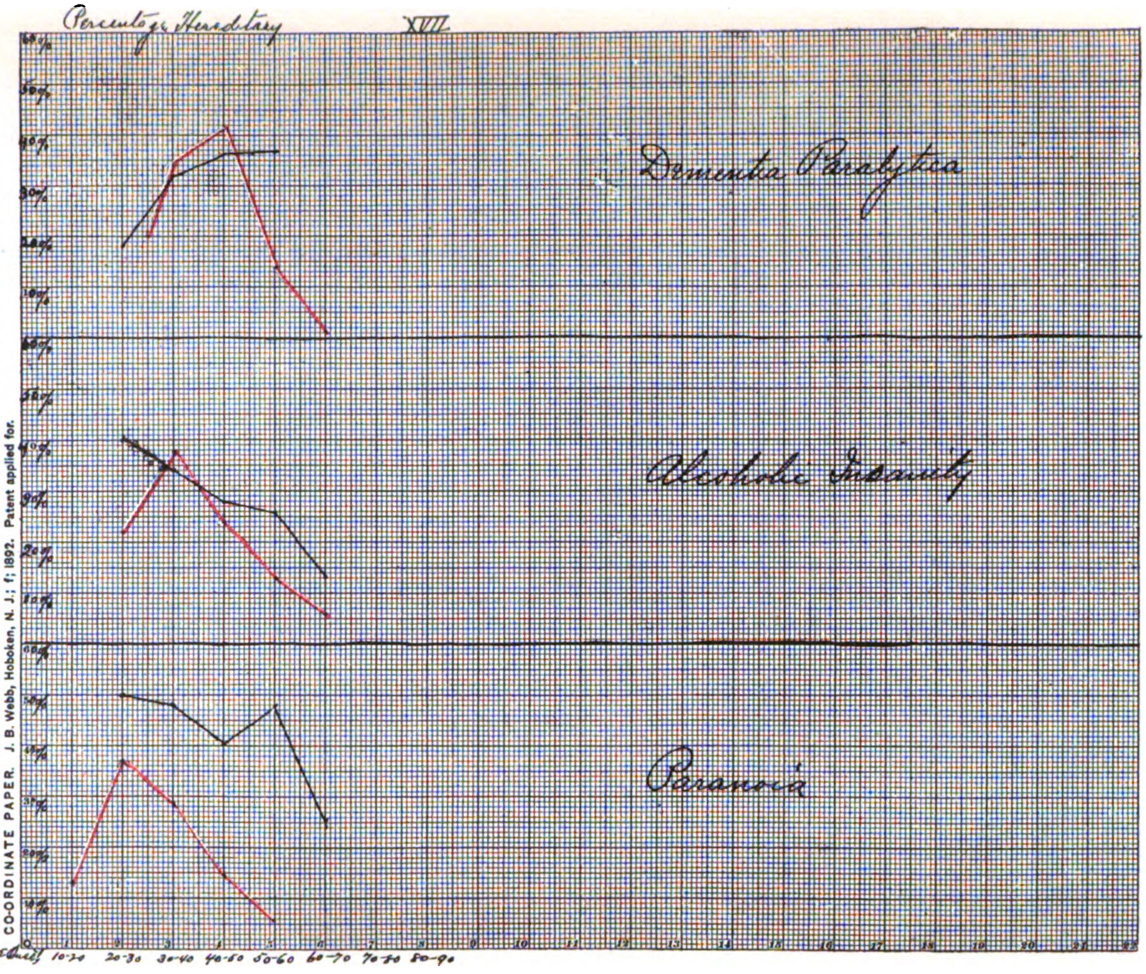

Percentage hereditary
Dementia Praecox
Black lines denote Percentages of Hereditary Cases
Red lines denote Psychoses
Periodical Insanity
Melancholia
100%
50%
40%
30%
20%
10%
Age period
0-10
10-20
20-30
30-40
40-50
50-60
60-70
70-80
80-90
CO-ORDINATE PAPER. J. B. Webb, Hoboken, N. J.; f; 1892. Patent applied for.
Angles
Natural Tangents

XVII


Percentage Hereditary
60%
50%
40%
30%
20%
10%
Epileptic Insanity
Senile Dementia
Organic Dementia
Age Period 10-20 20-30 30-40 40-50 50-60 60-70 70-80 80-90
Angles
Natural Tangents
CO-ORDINATE PAPER J. B Webb, Hoboken, N. J.; 1892. Patent applied for.

Percentage Hereditary

XVII



Angles	Natural Tangents
0°	000
1	017
2	.035
3	052
4	070
5	.087
6	.105
7	123
8	141
9	.158
10°	176
11	194
12	213
13	.231
14	.249
15	.268
16	.287
17	306
18	325
19	.344
20°	364
21	.384
22	.404
23	.424
24	445
25	466
26	.488
27	.510
28	.532
29	.554
30°	577
31	601
32	625
33	.649
34	.675
35	700
36	.727
37	754
38	781
39	810
40°	.839
41	869
42	900
43	.933
44	.966
45	1.000

TABLE XVIII.

PSYCHOSES OF INSANE CLASSIFIED BY OCCUPATIONS.

	Av. Per Cent. 1868–1900.	Laborers.		Farmers.		Housewives.		Shop-hands.		Domestics.		Store Employees.		Teachers.	
		No.	Per Cent.	No.	Per Cent.	No.	Per Cent.	No.	Per Cent.	No.	Per Cent.	No.	Per Cent.	No.	Per Cent.
Dementia Præcox . .	29.0	288	32.3	195	29.9	411	22.5	363	35.6	271	43.3	18	24.6	21	28.6
Manic Depressive Insanity	22.5	155	17.4	155	23.7	531	29.1	228	22.0	166	26.6	19	26.0	27	36.0
Alcoholic Insanity . .	8.3	142	15.9	30	4.6	83	4.6	109	10.5	15	2.4	6	8.2	—	—
Senile Dementia . .	8.4	64	7.1	85	13.0	208	11.4	42	4.0	43	6.9	4	5.5	1	1.3
Dementia Paralytica .	5.2	53	5.9	26	4.0	44	2.4	73	7.0	5	.8	6	8.2	1	1.3
Melancholia	8.5	52	5.8	39	6.	291	15.9	68	6.6	56	8.9	5	6.8	11	14.7
Organic Dementia . .	3.6	46	5.1	33	5.1	45	2.5	39	3.8	6	.9	6	8.2	—	—
Epileptic Insanity . .	4.6	30	3.3	35	5.3	38	2.0	36	3.5	23	3.7	5	6.8	2	2.7
Other Psychoses . . .	10.6	61	6.8	54	8.3	173	9.5	78	7.5	40	6.4	4	5.5	12	16.0
Total		891		652		1,824		1,036		625		73		75	

Table XVIII.

Table XVIII reveals the following: (1) The laborers, shop-hands, and domestics who become insane are especially prone to dementia præcox, while there are relatively few housewives, store employees, and teachers afflicted with this form of mental disease. (2) Periodical insanity is most frequent among the housewives, domestics, store employees, and teachers, and comparatively infrequent among the laborers. (3) Alcoholic insanity is more prominent among the laborers and shop-hands. (4) Senile dementia is very prominent among the insane farmers and housewives and notably infrequent in the remaining occupations. (5) Dementia paralytica is proportionately large among the shop-hands and the store employees. (6) Melancholia is largely a mental disease among housewives and teachers. (7) Organic dementia is most frequent among laborers, farmers, and store employees. (8) Epileptic insanity is markedly infrequent among the housewives and teachers.

Appendix.

The table in the appendix is added for the purpose of direct comparison of the insane population of the State for the various periods by counties and general nativity with the insane computed in a similar manner. It will be noticed that, although Windham County in the first period had a very large percentage of foreigners, it had a very low percentage of insane. In the next decade, however, there is a large increase of the foreign insane from this county, and the percentage of increase in the insane is the largest in the State.

This table also gives the increase of insane compared with the increase of population, and shows that, whereas from 1880 to 1890 there was a larger proportional increase of insane, from 1890 to 1900 the proportional increase has been very slight.

APPENDIX.

SUMMARY OF EACH COUNTY BY PERIODS AND GENERAL NATIVITY.

	State's Insane.	State's Population.	Foreign Insane.	Foreign Population.	Population Insane.	Increase Insane.	Increase Population.
Fairfield:							
1868–1880	15.0%	17.9%	33.3%	18.6%	.19%		
1880–1890	16.9	20.1	34.2	22.8	.30	112.6%	33.9%
1890–1900	15.9	20.2	35.4	24.8	.30	25.1	22.7
1868–1900	16.1		34.6				
Litchfield:							
1868–1880	5.5	8.3	21.5	14.2	.15		
1880–1890	5.5	7.1	32.2	18.5	.27	88.6	3.0
1890–1900	5.3	7.0	27.3	21.8	.29	27.5	18.6
1868–1900	5.4		27.9				
Windham:							
1868–1880	2.1	7.0	9.6	24.4	.07		
1880–1890	3.3	6.0	25.0	26.9	.19	183.9	2.9
1890–1900	2.9	5.1	32.0	27.0	.21	17.0	3.7
1868–1900	2.9		26.1				
Tolland:							
1868–1880	3.8	3.8	21.8	19.5	.22		
1880–1890	3.4	3.3	40.2	23.0	.36	67.2	4.0
1890–1900	2.6	2.6	32.5	23.5	.38	3.2	2.2
1868–1900	3.1		33.0				
Hartford:							
1868–1880	20.3	20.1	41.1	22.8	.21		
1880–1890	20.4	19.7	41.3	24.6	.37	88.9	17.3
1890–1900	22.7	21.0	47.7	27.5	.41	47.9	32.7
1868–1900	21.5		45.1				
New Haven:							
1868–1880	25.0	23.5	40.1	23.8	.22		
1880–1890	27.3	28.0	43.7	22.5	.35	107.3	33.5
1890–1900	26.7	29.6	42.9	28.9	.35	28.8	28.7
1868–1900	26.7		42.7				
New London:							
1868–1880	11.0	11.7	37.1	10.9	.22		
1880–1890	8.3	10.2	37.2	21.4	.28	33.5	4.7
1890–1900	8.7	9.1	32.2	22.2	.37	39.0	7.9
1868–1900	9.1		35.0				
Middlesex:							
1868–1880	11.1	5.7	31.0	16.7	.44		
1880–1890	8.6	5.2	30.7	27.6	.59	46.2	11.0
1890–1900	6.7	4.5	30.5	22.4	.57	3.4	5.6
1868–1900	8.2		30.7				
Total:							
1868–1880	100.	100.	36.2	20.8	.22		
1880–1890	100.	100.	38.7	26.1	.35	87.8	19.8
1890–1900	100.	100.	39.5	26.2	.36	33.1	21.7
1868–1900	100.		38.6				

In giving out the results of this study, the author realizes the incompleteness of the work from a sociological standpoint. A complete work would necessarily inquire into the causes and relate the facts disclosed to the sociological factors which are inherent in the various communities making up the State. Whatever deductions have been made and whatever conclusions have been drawn, it is necessary to keep in mind, are based on the figures for Connecticut only, and they may be subject to considerable variation, when other States are studied in the same way. The deductions are not general; for, to be such, it would be incumbent upon a single individual to go laboriously over the histories of the insane of many States. The figures are given out for Connecticut, however, with the hope that the alien of other States may be more thoroughly and systematically studied in the future than in the past, and that the sociological, environmental, and personal causes which incite mental disturbances may soon be disclosed for the benefit of a humanized people.

AMERICAN
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URBAN AND RURAL NEW ENGLAND.

By William B. Bailey.

For some time interest has been growing in the problem presented by the decay of the rural towns in New England, and numerous articles have been written upon it. There is, however, a singular absence of accurate statistical information upon the subject; and it is to state facts, rather than to propose remedies, that this article is written. It is generally understood that the small towns have been losing in population during recent years; but how great has been the loss, or from what decade it dates, is not so well known. No scientific discussion of the subject can be carried on, and no remedies proposed, until such study has been made.

There had been considerable manufacture on a small scale in New England during the eighteenth century. The colonies had largely imported manufactured articles, and exported raw materials. In 1807 the imports amounted to $138,500,000 and the exports to over $108,000,000. Then came the Embargo Act, and our imports fell to $57,000,000 and exports to $22,400,000 in one year. This prohibition of foreign trade necessitated the home manufacture of goods, and from this period dates the rapid growth of our industries.* The manufacturing towns grew rapidly, but the country districts were prosperous with their small mills and agriculture. Before the Erie Canal was opened, there was little competition in the raising of cereals, for grain could not be transported more than a hundred miles by wagon without losing its value.

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* F. W. Taussig, "The Tariff History of the United States," 4th edition, pp. 16, 17.

There may have been as many of the young men and women who left the country towns for the cities at this period as there are at present; but the size of families was so much greater that several sons or daughters could go to the city to make a fortune, and the old place be kept in the family and carried on to a profit by some member who considered it a privilege to inherit it. But about 1850 there came a change. The discovery of gold in California enticed many to try their fortune in this land of promise. The prairies of the Central West began to be settled, and sometimes a large party would leave a small town in New England to settle in the new country. The new town would then bear the name of the old one they had left. Then, too, there came the building of the railroads; and, as these pushed westward, they brought grain to the cities of the East, which undersold the product of the New England farms. As the cattle appeared on the vast ranges of the West, they left the pastures of the hill towns in the East. The small industries, which had in many cases made the country towns prosperous, were now moved to the larger cities, where there were better means of communication, a larger supply of labor, and the economies that go with combination. As a result of these varied caüses, the country towns declined; and the young men and women went in large numbers either to the cities or to the farms of the West.

Two different tasks are attempted in this paper: first, to determine the relative rates of increase, since 1850, of the places of different sizes in New England; and, secondly, to see if, at present, the constitution of the population is different in the cities from that in the country districts.

It was decided to group the population under six heads,—

places with a population greater than 100,000, 50,000 to 100,000, 25,000 to 50,000, 10,000 to 25,000, 4,000 to 10,000, and under 4,000. It would have been a comparatively easy matter to find out from the successive censuses the numbers living in places of these different sizes; but it was felt that the value of the study would be increased if a list was made of the places under each head in 1900, and the growth of the groups thus composed was traced from 1850. The same places would thus be grouped together all the way. A difficulty was soon encountered. Towns have been set off from others in some cases, and in a very few two or three have been drawn upon to form a new one. Where these places fell within the same group in 1900, no rearrangement was necessary; but where, for example, one place fell within the group of cities between 10,000 and 25,000, and the other within the group between 4,000 and 10,000, it was decided to include both within the former head. The only alternative would have been to determine the population on the territory which had been set off at the censuses prior to the date of division, and this was impossible. Therefore, the distribution of the population of 1900 in the tables showing growth is not exactly the same as in the tables showing static conditions; but, as these sets of tables are not used for purposes of comparison, the difference will cause no error in the results.

TABLE I.[*]

GROWTH OF POPULATION OF NEW ENGLAND BY DECADES.

	1900.	1890.	1880.	1870.	1860.	1850.
New England	5,592,017	4,700,745	4,010,529	3,487,924	3,135,283	2,728,116
Places over 100,000 in 1900	1,067,800	825,721	637,830	456,141	306,759	227,312
50,000 to 100,000 " "	813,188	589,018	433,096	326,057	244,036	163,885
25,000 to 50,000 " "	500,353	381,847	266,487	188,476	138,196	93,992
10,000 to 25,000 " "	897,306	712,793	540,678	444,162	358,173	272,836
4,000 to 10,000 " "	773,666	675,687	573,375	488,157	420,641	363,850
Places under 4,000 " "	1,539,704	1,515,679	1,559,063	1,654,931	1,667,478	1,606,241

[*] All the tables given in this article have been formed from figures in a United States Census. When abbreviations are given, M. stands for male, F. for female, and T. for the total of the two sexes.

In Table I. we have the growth of the population since 1850. If we take, for example, the numbers in 1900 in cities from 50,000 to 100,000, we have 813,188. Taking the corresponding number for 1850, we must not infer that there were 163,885 living in cities which were at that time between 50,000 and 100,000 in size, but that the area which contained 813,188 people in 1900 held 163,885 in 1850. The towns under 4,000 contained 27.5 per cent. of the total population in 1900; while in 1850 these same towns held 58.8 per cent. of the inhabitants. While the population of the small towns had fallen from 1,606,241 to 1,539,704, that of the rest of the States had increased from 1,121,875 to 4,052,313.

TABLE II.

COMPARATIVE GROWTH OF THE POPULATION BY DECADES.

	1900.	1890.	1880.	1870.	1860.	1850.
New England	205.0	172.3	147.0	127.9	114.9	100.0
Cities over 100,000 in 1900	469.8	363.3	280.6	200.7	134.9	100.0
50,000 to 100,000 " "	496.2	359.4	264.4	199.0	148.9	100.0
25,000 to 50,000 " "	532.4	406.3	283.6	200.6	147.0	100.0
10,000 to 25,000 " "	328.9	261.3	198.2	162.8	131.3	100.0
4,000 to 10,000 " "	212,7	185.7	157.6	134.2	115.6	100.0
Places under 4,000 " "	95.9	94.4	97.1	98.7	103.8	100.0

These changes are made more apparent by a study of Table II., which gives the growth of the population from 1850 to 1900. In this case the numbers in 1850 are reduced to the base of 100. During the entire period the total population has a little more than doubled. The size of the cities over 25,000 is about five times what it was fifty years ago, places from 10,000 to 25,000 about three times, from 4,000 to 10,000 about twice as large, while the towns under 4,000 have not held their own. There appears to be some connection between the size of cities and their rate of increase. This increase is of course intensified by the fact that only cities of rapid growth have been included in the upper classes; and, if the cities had been grouped according to their population in 1850, the same results would not have been obtained. This exceptional growth of the larger cities has been due, principally, to the factory system. The more purely manufacturing cities over 25,000 have increased from 136,402 to 782,519 during the past five decades.* This gives a comparative growth from 100 to 573.5. The population of the other cities in the same groups has grown from 100 to but 458.4. We can thus see the effect of manufacture in hastening this growth.

TABLE III.

PERCENTILE GROWTH OF POPULATION BY DECADES.

	1890–1900.	1880–90.	1870–80.	1860–70.	1850–60.
New England	19.0	17.2	15.0	11.3	14.9
Places over 100,000 in 1900 .	29.3	29.5	39.8	48.7	34.9
50,000 to 100,000 " " .	38.1	36.0	32.8	33.6	48.9
25,000 to 50,000 " " .	31.0	43.3	41.4	36.4	47.0
10,000 to 25,000 " " .	25.9	31.8	21.7	24.0	31.3
4,000 to 10,000 " " .	14.5	17.8	17.5	16.1	15.6
Places under 4,000 " " .	1.6	2.8†	1.6†	4.9†	8.8

The increase by decades is shown more clearly by Table III. With the single exception of the period during the Civil War there has been a constantly increasing rate of growth. In the decades ending in 1860 and 1900 it was most rapid for cities from 50,000 to 100,000; in 1870, for cities over 100,000; in 1880 and 1890, for cities from 25,000 to 50,000. It seems remarkable that the most rapid rate of increase for cities over 100,000 should have been from 1860 to 1870. In fact, the growth of Worcester and Fall River during this decade was over 74 per cent. Places from 4,000 to 10,000 barely maintained the rate of growth of the preceding decade, while for all of the others there was a decided loss. Places between 25,000 and 100,000 grew most rapidly in the decade ending 1860, while those between 4,000 and 25,000 had their maximum from 1880 to 1890. The small towns grew most rapidly before 1860; and since then, with the exception of a slight increase since 1890, there has been a steady decrease. In fact there were over 100,000 more people in these same country towns in 1860 than there are at present. We see from this that the rural depopulation constitutes a real problem.

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*These cities are Manchester, N.H.; Fall River, Haverhill, Holyoke, Lawrence, Lowell, Lynn, New Bedford, and Taunton, Mass.; Bridgeport, Meriden, New Britain, and Waterbury, Conn.; and Pawtucket, R.I.

† Decrease.

The remainder of the article will be devoted to the study of the composition of the population of New England at the present day, in order to determine if there are any decided distinctions between the country towns and the cities of different size.

CLASSIFICATION BY SEX OF THE TOTAL POPULATION IN 1900.

	Actual Numbers.			On Base of 1,000.		
	Total.	Male.	Female.	Total.	Male.	Female
New England . . .	5,592,017	2,763,796	2,828,221	1,000.0	494.3	505.7
Cities over 100,000 . .	1,067,800	523,178	544,622	191.0	93.6	97.4
50,000 to 100,000 . . .	762,049	368,138	393,911	136.3	65.8	70.5
25,000 to 50,000 . . .	488,209	237,701	250,508	87.4	42.5	44.9
10,000 to 25,000 . . .	832,700	402,797	429,903	149.1	72.2	76.9
4,000 to 10,000	825,864	405,004	420,860	147.7	72.4	75.3
Places under 4,000 . .	1,615,395	826,978	788,417	288.5	147.8	140.7

There are 64,425 more females than males in New England. In the places over 4,000 there is an excess of females amounting to 102,986, but in the country districts the males predominate to the number of 38,561. For the entire area there are 494.3 males to 505.7 females, but in the groups of places over 4,000 the males are never more than 490.4

to 1,000 of total population. In the places under 4,000 there are, however, 512.0 males to 488.0 females. This excess of females in the cities is due to a variety of causes. The greater rate of mortality among males would naturally tend to reduce their numbers. This cause would also act in the country districts, but the more hazardous occupations in which men engage are usually found in the cities. In the cities of the registration area the death-rate for males in 1900 was 2.3 per 1,000 higher than for females, while in the rural districts the excess for males was but 0.8 per 1,000.* The opportunities for employment in the country are principally open to men. Women are more dependent upon their friends than men, and therefore do not take kindly to the life of a servant in a small town. The occupations which are open to women are, as a rule, to be found in the cities. Those places which have kept their manufactures have grown so that they now contain more than 4,000 inhabitants, while the rural districts have lost in numbers. The women in search of work have therefore left the small towns and gone to the neighboring cities. Women are great migrants for a short distance, but do not take long journeys to get employment.

CLASSIFICATION BY SEX OF THE NATIVE-BORN POPULATION IN 1900.

	Actual Numbers.			On Base of 1,000.		
	Total.	Male.	Female.	Total.	Male.	Female.
New England . . .	4,146,780	2,048,171	2,098,609	1,000.0	493.9	506.1
Places over 100,000 . .	696,320	343,993	352,327	168.0	83.0	85.0
50,000 to 100,000 . . .	506,417	246,320	260,097	122.1	59.4	62.7
25,000 to 50,000	330,497	160,825	169,672	79.7	38.8	40.9
10,000 to 25,000	604,328	291,451	312,877	145.8	70.3	75.5
4,000 to 10,000	623,434	303,812	319,622	150.3	73.2	77.1
Places under 4,000 . .	1,385,784	701,770	684,014	334.1	169.2	164.9

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* Twelfth Census of the United States, vol. iii. p. lxiv.

Among the native-born there are almost exactly 50,000 more females than males; and the relation between the sexes is 493.9 to 506.1,—a slightly greater excess of females than in the total population. The females outnumber the males in all the groups over 4,000, but in the small towns the males predominate.

CLASSIFICATION BY SEX OF THE FOREIGN-BORN POPULATION IN 1900.

	Actual Numbers.			On Base of 1,000.		
	Total.	Male.	Female.	Total.	Male.	Female.
New England . . .	1,445,237	715,625	729,612	1,000.0	495.1	504.9
Places over 100,000 . .	371,480	179,185	192,295	257.1	124.0	133.1
50,000 to 100,000 . . .	255,632	121,818	133,814	176.9	84.3	92.6
25,000 to 50,000	157,712	76,876	80,836	109.1	53.2	55.9
10,000 to 25,000	228,372	111,346	117,026	158.0	77.0	81.0
4,000 to 10,000	202,430	101,192	101,238	140.1	70.0	70.1
Places under 4,000 . .	229,611	125,208	104,403	158.8	86.6	72.2

We might expect to find that among the foreign-born the males would lead, but this is not the case. There are 14,000 more females among this class; but the numbers are more nearly equal than with the native-born,—495.1 to 504.9. Throughout most of the country, among the foreign-born, the males are in excess; but in New England peculiar conditions have prevailed. When the people of a country begin to migrate, the single men or married men without their families are the first to leave. Later the wives go to join their husbands, and finally single women often go to take places which have been assured them. These young women do not leave until there is a colony of their friends or relatives in some place in the new world. New England has more of the Irish than of any other nationality. They began to come in large numbers before 1850, and since 1870 the women have arrived to take employment as servants or in the factories. At present a woman with a knowledge of English has perhaps a better chance to obtain immediate employment than a man. The demand for servants is continually greater than the supply. The building of steam railroads in New England was largely completed two decades ago, and there is not the demand for male labor in this line which formerly existed. Agriculture has not been very profitable; and the farm hands have gone farther west, some, like the Scandinavians, to take up new land, others to work by the month. The textile industries of Eastern New England have furnished employment to thousands of foreign-born women. Less than one-sixth of the foreign-born are in the country districts, while more than a third of the native-born are in places under 4,000.

CLASSIFICATION BY SEX OF THE NATIVE WHITES OF NATIVE PARENTS IN 1900.

	Actual Numbers.			On Base of 1,000.		
	Total.	Male.	Female.	Total.	Male.	Female.
New England	2,511,110	1,243,718	1,267,392	1,000.0	495.4	504.6
Places over 100,000	288,562	143,314	145,248	114.9	57.1	57.8
50,000 to 100,000	247,709	120,774	126,935	98.6	48.1	50.5
25,000 to 50,000	160,758	78,336	82,422	64.0	31.2	32.8
10,000 to 25,000	335,064	161,129	173,935	133.5	64.2	69.3
4,000 to 10,000	386,856	188,181	198,675	154.1	75.0	79.1
Places under 4,000	1,092,161	551,984	540,177	434.9	219.8	215.1

Equality between the sexes is more nearly reached among the native whites of native parents than in any other group. The numbers per thousand are 495.4 and 504.6. The reason is, as in all cases there are more females in places over 4,000, and more males in the small towns, that 43 per cent. of this class are in the country districts. They do not furnish their share of the population in the places over 10,000, but below this line they furnish a greater proportion than any other class.

CLASSIFICATION BY SEX OF THE NATIVE WHITES OF FOREIGN PARENTS IN 1900.

	Actual Numbers.			On Base of 1,000.		
	Total.	Male.	Female.	Total.	Male.	Female.
New England . . .	1,579,044	777,143	801,901	1,000.0	492.1	507.9
Places over 100,000 . .	388,325	191,140	197,185	246.0	121.1	124.9
50,000 to 100,000 . . .	248,651	120,815	127,836	157.5	76.5	81.0
25,000 to 50,000	166,308	80,895	85,413	105.4	51.3	54.1
10,000 to 25,000	260,976	126,500	134,476	165.4	80.2	85.2
4,000 to 10,000	231,198	113,154	118,044	146.4	71.7	74.7
Places under 4,000 . .	283,586	144,639	138,947	179.3	91.3	88.0

The native whites of foreign parents show the greatest disparity between the sexes of any class which has been studied, the males furnishing but 492.1 in 1,000. About a fourth of this class are found in cities over 100,000, whereas among those of native parents less than one-eighth are in these large cities. But in places under 4,000 the males lead.

CLASSIFICATION BY SEX OF THE NEGROES IN 1900.

	Actual Numbers.			On Base of 1,000.		
	Total.	Male.	Female.	Total.	Male.	Female.
New England . . .	59,099	28,579	30,520	1,000.0	483.6	516.4
Places over 100,000 . .	20,723	10,167	10,556	350.6	172.0	178.6
50,000 to 100,000 . . .	11,096	5,261	5,835	187.7	89.0	98.7
25,000 to 50,000	3,728	1,748	1,980	63.1	29.6	33.5
10,000 to 25,000	8,567	3,943	4,624	145.0	66.7	78.3
4,000 to 10,000	5,337	2,504	2,833	90.3	42.4	47.9
Places under 4,000 . .	9,648	4,956	4,692	163.3	83.9	79.4

It is among the negroes that we note the greatest difference. Here we find only 483.6 males to 516.4 females. The reason for this is that they are largely confined to the cities. Over 53 per cent. of the negroes are in cities over 50,000, and less than a sixth of them in the country.

Whether any class in the population has a large or small proportion of males seems to depend upon the percentage of that class which lives in the cities. City life, and that especially in places where the textile industry prevails, attracts women; and, if we have given the proportion of the population living in cities, we can make a good estimate of the relative numbers of the sexes. The labor of women is becoming increasingly mobile, and follows the demand for it. It does not appear to have been common that the supply of female labor in any place has determined the establishment of industry. A growing business has furnished demand, and migration the supply.

TABLE IV.

CLASSIFICATION OF POPULATION IN 1900 BY SEX AND NATIONALITY ON BASE OF 1,000.

		New England.	Places over 100,000.	50,000 to 100,000.	25,000 to 50,000.	10,000 to 25,000.	4,000 to 10,000.	Places under 4,000.
Total population	T.	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
	M.	494.3	490.0	483.1	486.9	483.7	490.4	512.0
	F.	505.7	510.0	516.9	513.1	516.3	509.6	488.0
Native-born .	T.	741.6	652.1	664.5	676.9	725.9	754.9	857.9
	M.	366.2	322.2	323.2	329.3	350.1	367.9	434.5
	F.	375.4	329.9	341.3	347.6	375.8	387.0	423.4
Foreign-born	T.	258.4	347.9	335.5	323.1	274.1	245.1	142.1
	M.	127.9	167.8	159.9	157.5	133.6	122.5	77.5
	F.	130.5	180.1	175.6	165.6	140.5	122.6	64.6
Native whites Native parents	T.	449.1	270.2	325.0	329.3	402.4	468.5	676.1
	M.	222.5	134.2	158.5	160.5	193.5	227.9	341.7
	F.	226.6	136.0	166.5	168.8	208.9	240.6	334.4
Native whites Foreign parents	T.	282.4	363.7	326.2	340.7	313.4	280.0	175.6
	M.	139.0	179.0	158.5	165.7	151.9	137.1	89.6
	F.	143.4	184.7	167.7	175.0	161.5	142.9	86.0
Negro . . .	T.	10.6	19.4	14.6	7.7	10.3	6.4	6.0
	M.	5.1	9.5	6.9	3.6	4.7	3.0	3.1
	F.	5.5	9.9	7.7	4.1	5.6	3.4	2.9

Nationality (Table IV.).—74 per cent. of the population is native-born, and 26 per cent. foreign-born. This gives a ratio of about 3 to 1, whereas for the whole country it is roughly 7 to 1. There is but one State in the Union, North Dakota, with a percentage of foreign-born inhabitants larger than that of Massachusetts and Rhode Island. Over a third of the population of the cities over 25,000 is foreign-born. It is a remarkable fact that the proportion of the foreign-born, commencing with 14.2 per cent. in the country towns, increases with each increase in the size of cities; while the converse of this holds for the native-born. This shows to a peculiar degree the attraction of the large city for the foreigner. It is in the large cities that the best opportunities for unskilled help are to be found; and there, too, are the aggregations of his own nationality, where he feels most at home. This probably holds true for the Russians, Italians, Greeks, and Chinese more than for any other races. In the cities over 25,000 the native whites of foreign parents greatly outnumber the native whites of native parents, while in the places under 4,000 the latter class is nearly four times as numerous as the former. With the single exception of the cities between 50,000 and 100,000 the ratio of the native whites of foreign parents steadily increases with the size of cities. The negroes concentrated in the large cities form the greatest of any class. Over 35 per cent. of them are in cities over 100,000. In the cities over 50,000 their proportion surpasses all others, while in places under 10,000 they have the smallest percentage of any class. In the cities over 25,000, 41.5 per cent. of the total population is found, while for negroes 60.1 per cent., foreign-born 54.3 per cent., native whites of foreign parents 51.0 per cent., native-born 37.0 per cent., and native whites of native parents only 27.7 per cent. This seems to show that there is a steady migration from the country to the cities. Those possessing little property and coming from a distance, like the foreign-born and negroes, find their way there at once. The children of the foreign-born stay in the cities where they are born; while the native whites of native parents, born in the country and kept there by the property they hold, gravitate less to the cities. Although the foreigner goes to the small town in some instances, he has not yet done so in sufficient numbers to repair the drain.

Age.—When we come to the distribution of the population by age groups, it is impossible to distinguish between the places of different size under 25,000, so that these have been grouped under one head. But above this the same classification has been preserved, and these groups are sufficient to enable us to trace numerous distinctions. The various classes have been divided into four age groups: under 15, from 15 to 35, from 35 to 65, and over 65. There remains a number with age unknown, but it is comparatively small. It was thought best in this division of the subject to introduce only the tables of percentages, as these are much better for purposes of comparison than those giving the actual numbers in each group.

TABLE V.

TOTAL POPULATION IN 1900 CLASSIFIED BY SEX AND AGE ON BASE OF 1,000.

		All Ages.	Under 15.	15 to 35.	35 to 65.	Over 65.	Age unknown.
New England . . .	T.	1,000.0	274.1	360.4	303.9	58.9	2.7
	M.	494.3	137.4	177.0	150.9	27.2	1.8
	F.	505.7	136.7	183.4	153.0	31.7	0.9
Cities over 100,000 . .	T.	1,000.0	274.8	389.6	295.4	36.9	3.3
	M.	490.0	137.5	189.0	145.7	15.5	2.3
	F.	510.0	137.3	200.6	149.7	21.4	1.0
50,000 to 100,000 . . .	T.	1,000.0	271.3	389.3	294.5	41.9	3.0
	M.	483.1	135.2	186.7	141.7	17.5	2.0
	F.	516.9	136.1	202.6	152.8	24.4	1.0
25,000 to 50,000 . . .	T.	1,000.0	291.9	378.7	286.0	40.9	2.5
	M.	486.9	145.2	182.2	140.5	17.4	1.6
	F.	513.1	146.7	196.5	145.5	23.5	0.9
Places under 25,000 .	T.	1,000.0	272.1	341.4	311.5	72.5	2.5
	M.	499.4	136.8	170.1	156.3	34.5	1.7
	F.	500.6	135.3	171.3	155.2	38.0	0.8

Turning to the total population (Table V.), we find that almost exactly two-thirds are between 15 and 65 years of age, leaving at least one-third who by reason of their years are unable to support themselves. For those under 15 years there seems to be but small difference except in cities from 25,000 to 50,000, where they are most numerous. From Table IV. we see that there is a particularly large proportion of native whites of foreign parents in these cities; and, since they are very largely in the early age groups, this would account for the great number of children. But, when we come to the productive age groups from 15 to 65, there are marked differences. In the largest cities there are the most to be found, and the number regularly decreases until we come to the smallest towns. The number per 1,000 for cities over 100,000 is 685.0; from 50,000 to 100,000, 683.8; from 25,000 to 50,000, 664.7; and, under 25,000, 652.9. The number between 15 and 35 is particularly small in the country districts, probably due to the fact that many of the youth have gone to the cities to complete an education. To many, city life seems to offer varied advantages that cannot be obtained in the country. Young women go to the cities for employment as stenographers or book-keepers; while the young men see that the great prizes in business are in the large cities, and hope that they may obtain one. When we come to the groups over 65 years, we find that nearly twice as many per 1,000 are in the small places as in the cities over 100,000. If we could obtain the figures for the places under 4,000 alone, it is probable that the distinction would be even more marked. The reasons for this difference are apparent. Even if the death-rates in the city and country were equal, we should have proportionately fewer in the older age groups in the city; for the population there is largely recruited by immigration, and these new arrivals are generally between 15 and 40. The higher birth-rate in the cities intensifies this. Then, too, many who have spent the more active years of life in the city, go to the country for their declining years.

The number of males and females under 15 years is nearly equal, and there are but slight differences in this respect between the cities of various sizes. This is because migration does not affect the children to any great extent, and the births are divided very nearly equally between the sexes. After 15 there is no case where the males equal the females in numbers except between 35 and 65 in the places under 25,000. If we had the places under 4,000 separated from the others, we should doubtless find in all age groups, except that over 65, a majority of males in these small towns.

TABLE VI.

NATIVE-BORN POPULATION IN 1900 CLASSIFIED BY SEX AND AGE ON BASE OF 1,000.

		All Ages.	Under 15.	15 to 35.	35 to 65.	Over 65.	Age unknown.
New England . . .	T.	1,000.0	345.5	331.3	262.8	57.9	2.5
	M.	493.9	173.3	163.2	129.1	26.6	1.7
	F.	506.1	172.2	168.1	133.7	31.3	0.8
Cities over 100,000 . .	T.	1,000.0	387.0	358.4	221.4	29.2	4.0
	M.	494.0	193.7	177.1	108.3	12.0	2.9
	F.	506.0	193.3	181.3	113.1	17.2	1.1
50,000 to 100,000 . . .	T.	1,000.0	372.2	348.0	238.4	38.0	3.4
	M.	486.4	185.9	169.7	112.8	15.6	2.4
	F.	513.6	186.3	178.3	125.6	22.4	1.0
25,000 to 50,000 . . .	T.	1,000.0	397.0	335.6	228.2	36.8	2.4
	M.	486.5	197.7	162.2	109.7	15.5	1.4
	F.	513.5	199.3	173.4	118.5	21.3	1.0
Places under 25,000 .	T.	1,000.0	322.7	320.2	283.1	72.0	2.0
	M.	496.3	162.3	158.5	140.3	33.9	1.3
	F.	503.7	160.4	161.7	142.8	38.1	0.7

In the native-born (Table VI.) we have a population which has been affected only indirectly by foreign immigration, and the distribution of the population has been brought about more by birth and death rates. We can thus see whether economic and social forces tend to affect the age classification of the cities of different sizes. Under 15 years there are 34.5 per cent. of this portion of the population, while only 27.4 per cent. of the total population is in the same age group. Two-thirds of the total population are between 15 and 65 years, while less than three-fifths of the native-born fall within the same group. The proportion over 65 varies but little. When we compare the various groups of native-born under 15 by size of city, we find grave differences. In no case are there within 5 per cent. as many children in places under 25,000 as in any group over this, and in one case the figure is as high as 7.5 per cent. This is partially due to the lower birth-rate in the country, partially to the presence of more old persons which reduces the proportion of the young, and in part to the fact that, when children get to be from 10 to 12 years of age, they are often taken to the city to be educated. Economic forces cannot act upon a class at this early age. From 15 to 35 there are proportionately fewer in the small than the large places. In fact, as the size of city increases, so does the proportion within this active age group increase in regular order. This is the result of migration. The young men and women go to the cities to enjoy the greater social, educational, and business opportunities which are there offered. When we pass the 35th year, we meet with a change. In the succeeding group there are about 5 per cent. more in the small than in the large places. As the cities are recruited not only by a high birth-rate, but by the migration of the youth from the country, we should expect that there would be relatively fewer in the higher age groups than in the country districts where causes opposed to these are at work. Then, too, the higher death-rate of the cities reduces the numbers in this group. The effect of greater mortality is more noticeable in the highest age group, including those over 65. We find the representatives of this group twice as numerous in the places under 25,000 as in those over this number. This is largely, as before stated, traceable to the high death-rate of the cities; but there is also the tendency to retire to the old home in the country for the remaining years of life.

Under 15 there are more boys than girls. This is due solely to the proportion between the sexes at birth; for, with the exception of a very few years after 20, the death-rate of males is always higher than that for females. From this age forward there is always a majority of females. It is unfortunate that we could not separate the places under 4,000, but it was impossible to do so. Had this been done, we should probably have found the males outnumbering the females in all age groups under 65. Above this age the females might have led, but it is entirely problematical.

TABLE VII.

Foreign-born Population in 1900 Classified by Sex and Age on Base of 1,000.

		All Ages.	Under 15.	15 to 35.	35 to 65.	Over 65.	Age unknown.
New England . . .	T.	1,000.0	69.5	444.2	421.6	61.5	3.2
	M.	495.1	34.4	216.5	213.4	28.7	2.1
	F.	504.9	35.1	227.7	208.2	32.8	1.1
Places over 100,000 .	T.	1,000.0	64.4	448.4	434.3	51.3	1.6
	M.	482.3	32.1	211.3	216.0	22.0	0.9
	F.	517.7	32.3	237.1	218.3	29.3	0.7
50,000 to 100,000 . .	T.	1,000.0	71.3	471.2	405.5	49.8	2.2
	M.	476.5	34.7	220.6	198.8	21.3	1.1
	F.	523.5	36.6	250.6	206.7	28.5	1.1
25,000 to 50,000 . . .	T.	1,000.0	71.4	468.9	407.3	49.6	2.8
	M.	487.4	35.0	224.1	205.0	21.3	2.0
	F.	512.6	36.4	244.8	202.3	28.3	0.8
Places under 25,000 .	T.	1,000.0	71.3	425.4	424.1	74.8	4.4
	M.	511.4	35.5	216.1	219.6	37.1	3.1
	F.	488.6	35.8	209.3	204.5	37.7	1.3

Turning to the foreign-born (Table VII.), we are confronted with entirely different conditions. Among the native-born over a third of the population is under 15, while with the immigrants less than one-fourteenth is in this age group. 86.6 per cent. of the foreign-born are between 15 and 65, compared to 59.4 per cent. of the native-born. The proportionate numbers over 65 years are about equal for the two classes, with the foreign-born slightly in the lead. Nothing should be concluded from this last statement as to the relative mortality of the two groups, for with the small number of children among the foreign-born there would of necessity be more in the higher age groups. But, on the other hand, the foreigners have been coming to New England in continually increasing numbers of late; and it is too early for many of the Italians and Russians to have reached this advanced age. They are quite largely in the age group between 35 and 65. It is never safe, without the classification of a group, to draw conclusions as to the rate of mortality. And, in fact, the crude death-rate of two groups serves as a poor criterion of their relative healthiness, unless the age classification is similar.

The smallest number of children among the foreign-born is found in the cities over 100,000. This is due to the fact that the single men and women are more common in the large centres. The reason for this is found in the crowding of the late comers into the foreign quarters of the large cities. These latest arrivals, as is always the case when a nation is beginning to emigrate, are more often single. Therefore, the number of children is small. From 15 to 35 the opposite is the case, and of this group there are more in the large than in the small places. This class is composed of the more recent immigrants who have come to the large centres, where numbers of the same nationality have already settled. Between the ages of 35 and 65 we find a peculiar distribution. In the cities between 25,000 and 100,000 there are comparatively few of this age group. The reason for this is not apparent on the surface, but is most likely the following. Before 1880 the immigrants settled principally in the few largest cities. Since then they have also come to the other cities of considerable size. A glance at the table will show that the numbers between 15 and 35 in the cities between 25,000 and 100,000 is higher than in any other groups, and between 35 and 65 is lower than any others. These immigrants have not been in the country long enough to swell the numbers in the higher age groups. This same reasoning applies to the group over 65. The large numbers found in the small places in the two upper age groups is due to different causes. It takes some time for an immigrant to save up enough money to buy a farm, and in a great many cases he stays in the city to work for several years before he buys his little place in the country. Thus the higher age group would be found better represented in the small towns. Then, too, life for a single person is not so attractive in the country as in the city. Opportunities for domestic service and work in the factories attract the young to the cities. The higher death-rate of the cities also tends to reduce the numbers of the old.

There are more females than males under 15, regardless of the size of place. Between 15 and 35 there are more females except in places under 25,000. The foreigners under 35 are not often held to any place by ties of property, and are therefore free to follow their choice in selecting their place of residence. Social affinity, as among the Jews, may decide the question; but it is generally a purely economic motive. It is, therefore, interesting to note that in this active age group the males are more common in the country, and the females in the city. This is almost wholly due to the fact that it is in the cities that the women find employment best suited to their tastes and capabilities. The farms offer work to the men. Between 35 and 65 there are more males than females. But in the cities over 50,000 the females are in the majority. The great disparity lies in the places under 25,000, where the males are far more numerous. In the age group over 65 there are more females than males in every case, although in the group of smallest places the difference is not appreciable. The predominance of females in this highest age group is due almost entirely to the higher mortality among males.

TABLE VIII.

TOTAL POPULATION IN 1900 CLASSIFIED BY SEX, AGE, AND NATIVITY ON BASE OF 1,000.

		All Ages.	Under 15.	15 to 35.	35 to 65.	Over 65.	Age unknown.
Total Population:							
New England . .	T.	1,000.0	274.1	360.4	303.9	58.9	2.7
	M.	494.3	137.4	177.0	150.9	27.2	1.8
	F.	505.7	136.7	183.4	153.0	31.7	0.9
Places over 25,000 .	T.	414.5	114.9	160.5	121.5	16.4	1.2
	M.	201.9	57.4	77.4	59.4	6.9	0.8
	F.	212.6	57.5	83.1	62.1	9.5	0.4
Places under 25,000	T.	585.5	159.2	199.9	182.4	42.5	1.5
	M.	292.4	80.0	99.6	91.5	20.3	1.0
	F.	293.1	79.2	100.3	90.9	22.2	0.5
Native-born:							
New England . .	T.	741.6	256.3	245.6	194.9	42.9	1.9
	M.	366.2	128.5	121.0	95.7	19.7	1.3
	F.	375.4	127.8	124.6	99.2	23.2	0.6
Places over 25,000 .	T.	274.3	105.5	96.0	62.6	9.2	1.0
	M.	134.3	52.7	47.0	30.1	3.8	0.7
	F.	140.0	52.8	49.0	32.5	5.4	0.3
Places under 25,000	T.	467.3	150.8	149.6	132.3	33.7	0.9
	M.	231.9	75.8	74.0	65.6	15.9	0.6
	F.	235.4	75.0	75.6	66.7	17.8	0.3
Foreign-born:							
New England . .	T.	258.4	17.8	114.8	109.0	16.0	0.8
	M.	128.1	8.9	56.0	55.2	7.5	0.5
	F.	130.3	8.9	58.8	53.8	8.5	0.3
Places over 25,000 .	T.	140.2	9.4	64.5	58.9	7.2	0.2
	M.	67.6	4.7	30.4	29.3	3.1	0.1
	F.	72.6	4.7	34.1	29.6	4.1	0.1
Places under 25,000	T.	118.2	8.4	50.3	50.1	8.8	0.6
	M.	60.5	4.2	25.6	25.9	4.4	0.4
	F.	57.7	4.2	24.7	24.2	4.4	0.2

Table VIII. has been introduced in order to show at a glance how the population is divided by sex, age, and nativity with a base of 1,000. Thus it is possible to tell the number of males among the foreign-born between the ages of 15 and 35 in places under 25,000. In order to reduce the size of the table without greatly impairing its value, the cities over 25,000 have been included under one head. In the total population there are proportionately about 40 per cent. more children in the places under 25,000 than in those over that number. Yet, when we take the age group over 65, the places of smaller size lead by about 150 per cent. So, too, with the native-born. Under 15 years they are scarcely 50 per cent. more numerous in the smaller places, but the disparity gradually increases until, over 65, there are nearly 300 per cent. more in the country districts. Among the foreign-born there are more in the larger than in the smaller places, until the oldest group is reached, where the proportion is reversed.

Conjugal Condition.—As was done when dealing with the age classification, so, when we take up the subject of the conjugal condition, the gross numbers are not given, but simply the percentages.

TABLE IX.

TOTAL POPULATION IN 1900 CLASSIFIED BY SEX AND CONJUGAL CONDITION ON BASE OF 1,000.

		New England.	Cities over 100,000.	50,000 to 100,000.	25,000 to 50,000.	Places under 25,000.
Aggregate . . .	T.	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
	M.	494.3	490.0	483.1	486.9	499.4
	F.	505.7	510.0	516.9	513.1	500.6
Single	T.	541.9	573.3	553.6	565.8	525.8
	M.	277.3	289.5	274.7	282.6	273.2
	F.	264.6	282.8	278.9	283.2	252.6
Married	T.	387.6	360.8	378.9	373.0	400.5
	M.	194.7	181.3	189.5	186.9	201.4
	F.	192.9	179.5	189.4	186.1	199.1
Widowed	T.	64.5	61.4	62.1	56.8	67.3
	M.	19.0	16.2	16.0	15.3	21.2
	F.	45.5	45.2	46.1	41.5	46.1
Divorced	T.	3.4	2.5	2.5	2.2	4.0
	M.	1.5	0.9	0.9	0.8	1.9
	F.	1.9	1.6	1.6	1.4	2.1
Unknown	T.	2.6	3.0	2.9	2.2	2.4
	M.	1.8	2.1	2.0	1.3	1.7
	F.	0.8	0.9	0.9	0.9	0.7

Considering the total population (Table IX.), we find that 54.2 per cent. are single, 38.8 per cent. married, 6.4 per cent. widowed, and 0.3 per cent. divorced. As the size of city increases, the proportion of single persons increases; and there are 5 per cent. more of this class in the cities over 100,000 than in the places under 25,000. The married, widowed, and divorced persons are most numerous in the smaller places. These figures, however, show nothing but the numbers of each class in the cities of different sizes. They are interesting for purposes of comparison, but they do not show conclusively the tendency of city life with regard to matrimony. To bring this point out clearly, we need to compare the numbers of single and married persons with the numbers in the different age groups. One population might have a larger number of children than another, so that the proportion of single persons would of necessity be large. In order to make a more careful study of this point, Table X. has been drawn up. If the Census had given the numbers of single, married persons, etc., by age groups for places as small as 25,000, the line of demarcation would have been drawn there; but this was done only for the total population of the States and the cities over 100,000. Therefore, in this table we must be contented with a comparison of the cities over this number and those below. This is not as satisfactory as the other tables, but it is the best that can be computed.

TABLE X.

TOTAL POPULATION IN 1900 CLASSIFIED BY SEX, AGE, AND CONJUGAL CONDITION ON BASE OF 1,000.

		All Ages.	Under 15.	15 to 35.	35 to 65.	Over 65.	Age unknown.
Aggregate:							
Cities over 100,000 .	T.	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
	M.	490.0	500.3	485.0	493.3	420.5	699.0
	F.	510.0	499.7	515.0	506.7	579.5	301.0
Places under 100,000	T.	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
	M.	495.4	501.3	492.8	497.4	466.5	661.6
	F.	504.6	498.7	507.2	502.6	533.5	338.4
Single:							
Cities over 100,000 .	T.	572.3	1,000.0	627.4	165.8	84.4	239.9
	M.	289.5	500.3	325.5	80.6	23.1	146.1
	F.	282.8	499.7	301.9	85.2	61.3	93.8
Places under 100,000	T.	534.9	999.7	605.5	135.6	72.9	267.6
	M.	274.5	501.3	323.9	66.9	26.7	175.2
	F.	260.4	498.4	281.6	68.7	46.2	92.4
Married:							
Cities over 100,000 .	T.	360.8	*	356.7	696.8	419.8	159.6
	M.	181.3	*	154.6	375.4	267.9	84.7
	F.	179.5	*	202.1	321.4	151.9	74.9
Places under 100,000	T.	393.9	0.2	380.2	746.1	477.1	280.7
	M.	197.9	*	163.1	393.4	303.6	167.3
	F.	196.0	0.2	217.1	352.7	173.5	113.4
Widowed:							
Cities over 100,000	T.	61.4	*	11.7	130.6	491.5	40.0
	M.	16.2	0.0	3.2	34.5	127.6	11.2
	F.	45.2	*	8.5	96.1	363.9	28.8
Places under 100,000	T.	65.3	*	9.5	109.0	443.9	75.6
	M.	19.7	*	3.4	32.4	132.7	26.5
	F.	45.6	*	6.1	76.6	311.2	49.1
Divorced:							
Cities over 100,000 .	T.	2.5	0.0	2.0	5.5	2.8	0.9
	M.	0.9	0.0	0.5	2.1	1.4	0.0
	F.	1.6	0.0	1.5	3.4	1.4	0.9
Places under 100,000	T.	3.5	0.0	2.4	7.8	4.2	2.6
	M.	1.6	0.0	0.8	3.7	2.5	1.8
	F.	1.9	0.0	1.6	4.1	1.7	0.8
Unknown:							
Cities over 100,000 .	T.	3.0	*	2.2	1.3	1.5	559.6
	M.	2.1	*	1.2	0.7	0.5	457.0
	F.	0.9	*	1.0	0.6	1.0	102.6
Places under 100,000	T.	2.4	0.1	2.4	1.5	1.9	373.5
	M.	1.7	*	1.6	1.0	1.0	290.8
	F.	0.7	0.1	0.8	0.5	0.9	82.7

* Less than 0.1.

The first thing noticeable is the greater disparity between the sexes in the large than the small cities. It is, therefore, necessary that there be a smaller number of married among the females than the males. This surplus could never have been married, or else must have been separated from their husbands by either death or divorce. The only alternative is that they are living apart from their husbands. It may be that the husbands of some are absent, but this number is more than offset by the married men among the immigrants who have left their wives at home. The natural result of such disparity between the sexes is a large number of single among the numerically superior. It is unfortunate that we cannot compare with these the places under 4,000 where the males outnumber the females; for it is probable that we should find here a greater proportion of married or, at any rate, of married plus widowed among the women than the men. Taking up the distribution by age groups, we find, of course, that practically all under 15 years are single. In all New England there are 30 males and 96 females married and 2 males and 8 females widowed in this earliest age group. None are divorced. Almost exactly half of these (66) are native whites of native parents. 31 native whites of foreign parents, 36 foreign whites, and 2 persons of negro descent. Of these, 23 are in places of over 100,000. Since these cities contain about 20 per cent. of the total population, it is clear that prematurely early marriages are not as common in the very large cities as among the remainder of the population. But the total number of cases is too small to enable us to draw any accurate conclusions. Proceeding to the age group between 15 and 35, we find that there are more single persons in the large than in the small cities. The same is true among the widowed, showing here the effect of the higher death-rate of the metropolis. There are, however, about 2.4 per cent. more married persons in the smaller places. This is quite as we should expect to find it. Cost of living, and particularly rent, is considerably higher in the great centres. Many prefer to remain single to a greater age in the city on account of the difficulty of setting up a suitable establishment. The man has become accustomed to a certain standard of living, and feels that, if he marries, he will have to give up many pleasures which he has begun to look upon in the light of necessities. A wife to him is not an economic advantage. There are more opportunities for a young woman to support herself in a large city than elsewhere; and she may be unwilling to renounce her independence, and assume the cares of a home. Club life tends to intensify this feeling with both sexes. The large apartment building in these great centres makes housekeeping much easier for the wife, and partially overcomes this objection to taking the care of a home. It is by the farmer that the need of a wife is most severely felt; for to him she becomes an economic advantage, and in the sparsely settled districts, where social intercourse is slight, the home must be the great centre. We should therefore expect that in the small places there would be earlier marriages than in the large centres. With regard to sex there are in the age group between 15 and 35 more than twice as many single as married among the males in the cities of the first class, but not twice as many in the smaller places. There are about 50 per cent. more females single than married in the large cities, but an excess of less than 30 per cent. in the small ones. Less than a sixth of the males and more than a fifth of the females are married in both classes, caused by the fact that the latter marry at an earlier age.

We come now to the age group from 35 to 65. Here, again, there are more single and fewer married in the cities of the first class. The number of widowed has also grown more rapidly in the large centres, until there is now a difference of more than 20 in 1,000. In the previous age group the single outnumbered the married nearly 2 to 1, and were about sixty times as numerous as the widowed. Now there are about four times as many married as single, and the latter are only slightly ahead of the widowed. The number of single persons is now greater among the females than the males. There are two reasons for this. The higher death-rate among the males has been continually depleting their numbers. Also, more men than women marry in the higher age groups. There are nearly three times as many widows as widowers in the large cities, while in the small places there are but a little more than twice as many. There are a few more widowers in the large than the small places, but the higher mortality of the cities does not affect the women as much as the men. The worry and dissipation of city life is fatal to the men, while the death-rates of women are not so much raised. In the registration area for 1900 the death-rate for males was 4.0 per 1,000 greater in the cities than in the country, while that for females was but 2.5 higher.*

Of persons over 65 years of age there are about a sixth more single to 1,000 of total population in the large cities. There are, then, more who never marry. The proportion of married is much greater in the smaller places. The widowed are much more numerous in the large cities. The number of married in the small places is so much larger than in the great cities in this age group, not only because there are fewer who have never married, but because the higher mortality of the large centre has broken up the marriage by the death of one of the parties. In the cities of first size single are about one-fifth as numerous as married persons, and one-sixth as the widowed. In the small places, on the contrary, the married outnumber the widowed. Among the single and widowed the females outnumber the males, but in the case of the married the opposite is true. In every case the disparity is greater in the large cities.

Occupations (Table XI.).—In the statistics of occupations only that portion of the population is included which is 10 years of age or older. Here we find that, with the single exception of the cities over 100,000, the number engaged in the gainful occupations increases with the size of the city.

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* Twelfth Census of the United States, vol. iii., p. lxiv.

TABLE XI.

TOTAL POPULATION OVER 10 YEARS OF AGE IN 1900 CLASSIFIED BY SEX AND OCCUPATION ON BASE OF 1,000.

		New England.	Places over 100,000.	50,000 to 100,000.	25,000 to 50,000.	Places under 25,000.
Population, 10 Years of Age and over	T.	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
	M.	492.6	487.2	479.0	483.5	498.7
	F.	507.4	512.8	521.0	516.5	501.3
Persons engaged in Gainful Occupations	T.	525.2	554.9	556.4	537.7	508.7
	M.	395.6	397.9	391.9	390.8	398.6
	F.	129.6	157.0	164.5	146.9	110.1
Agriculture	T.	63.6	4.4	6.0	8.5	104.1
	M.	61.4	4.3	5.9	8.4	100.5
	F.	2.2	0.1	0.1	0.1	3.6
Professional	T.	25.3	29.6	27.2	22.8	23.9
	M.	15.0	19.7	16.9	13.8	13.1
	F.	10.3	9.9	9.3	9.0	10.8
Domestic and Personal . . .	T.	99.3	127.3	100.2	91.6	91.3
	M.	57.2	72.6	54.9	51.0	53.8
	F.	42.1	54.7	45.3	40.6	37.5
Trade and Transportation . .	T.	106.1	158.8	133.2	117.5	81.2
	M.	90.7	130.8	111.0	98.2	72.0
	F.	15.4	28.0	22.2	19.3	9.2
Manufacture and Mechanical,	T.	230.9	234.8	290.8	297.3	206.2
	M.	171.3	170.5	203.2	219.4	157.2
	F.	59.6	64.3	87.6	77.9	49.0

In the two highest groups the numbers are nearly equal. In no case is less than a half of the capable population at work. In this section the numbers over 10 years will be considered as the total population, since no record need be made of the children. 6 per cent. of the total population is engaged in agriculture. Here, as is natural, the proportion increases as the size of city decreases. Under 25,000, 10 per cent. are so employed; but in cities above this line the number in no case equals 1 per cent. About 2.5 per cent. are in the professional classes. The large cities contain more than their proportional share. The number of males in this class follows the order of cities, but with the females the proportion is largest in the smallest places. This is doubtless due to the number of female teachers in the country districts, where the attendance in many of the schools is very small. When we come to domestic and personal service, we find 9.9 per cent. of the population included. Here, again, the proportion increases with the size of city. This progression is more marked for the females. With the exception of the cities over 100,000 the number of males shows small variations. The large cities are the termini of railroads and the great shipping points. We should therefore expect that, the larger the city, the larger would be the numbers engaged in trade and transportation. This is the case, and with the exception of agriculture this occupation shows the greatest variations. There are nearly twice as many thus occupied in the cities over 100,000 as in the places under 25,000. With the females the ratio is nearly 3 to 1. Since most of the women are employed as clerks, saleswomen, and stenographers, it is easy to see why they are so much more numerous in the business centres. As the cities over 100,000 are such centres, and the smallest places have more agriculture than the others, so the places from 25,000 to 100,000 are the manufacturing cities. In the cities of this size there are more engaged in this than in all of the other occupations combined. This cannot be said of either of the other classes.

When we consider the proportion between the sexes in the different occupations, we find it most nearly equal in domestic and personal service. Then follow in order the professions, manufacture, trade and transportation, and agriculture. This accounts, in great measure, for the exodus of females from the rural districts. There seems to be little which they desire to do in the country towns. The trades in which they are most largely represented are in the cities. They have gone there to obtain employment. As is true in most cases of migration, an economic cause is behind it. To 1,000 of total population there are about a half more women at work in gainful occupations in the cities from 50,000 to 100,000 than in places under 25,000. No treatment of the rural problem can be exhaustive which does not give great weight to this factor.

Illiteracy.—This is no place to enter upon the relative merits of the city and country schools in New England, except in so far as the figures of Table XII. give their convincing testimony on the question. It is hard to get a measure of education. It is much easier to get one for the lack of it. A good rough test is the ability to read and write. There are many, especially among the immigrants, who attend night school when in the prime of life; but the greater part of the people can read and write at ten years of age if they ever can. This rough test has therefore been applied, and the figures show the number out of 1,000 over 10 years of age who can neither read nor write any language. We find that for all New England there are 60.2 per 1,000 who can do neither. Looking at the table hastily, and consulting none but the total population, we should be inclined to say that the level of education was highest in the country, and lower in the large cities. Let us, then, divide the population into native whites, foreign whites, and colored. What do we find now to be the case? In every instance there is a steady progression in illiteracy from the largest to the small-

TABLE XII.

NUMBER OF ILLITERATES IN NEW ENGLAND PER 1,000 OF POPULATION 10 YEARS OF AGE AND OVER IN 1900.

	New England.	Places over 100,000.	50,000 to 100,000.	25,000 to 50,000.	Places under 25,000.
Total Population .	60.2	63.9	61.1	64.6	58.2
Native Whites . .	13.1	5.4	5.6	7.3	17.0
Foreign Whites . .	161.5	139.6	140.2	150.5	184.7
Colored	130.5	118.0	119.3	123.8	147.8

est places. Take the groups in order. Among the native whites there are over three times as many illiterates to 1,000 in the places under 25,000 as in those over 100,000. The level of education among the native whites is much higher in the cities than in the country. This has doubtless been intensified, in many cases, by the fact that the best educated in the country have gone to the cities. It is felt that, if a person is to make a success in a large city, a fair education is a necessity. The best have continually gone forth, and left the illiterate behind. But the superior advantages of the city schools should be given their share of praise.

The same is true of the foreign whites. The best of them have gone to the cities. The artists and musicians are found there. The uneducated peasantry have gone to the country. Some nationalities, like the Russians, are eager to avail themselves of any opportunity to improve their minds, that they may make a greater success of life. Others, like the Italians, do not seem to care so much for this. This difference in literacy between the foreign-born in the cities and country is due to the double fact that the best have gone to the cities, and that the opportunity for education by night schools is greater than in the country.

The case of the colored is not at all different. The best are in the cities. Here we find a combination of the reasons that related to the two previous classes. Some have been born and educated in New England, so that the same causes which apply to the native whites would hold with them. Others have come from the South, where the level of education is as low as in the countries from which our immigrants come. If they can read and write any language, it is English; but only a few of the Southern negroes can do this. In 11 of the States of this country more than half of the blacks are illiterate. When this class comes to the North, it is often to engage in farm labor, if male; and the proportion of illiterates in the country is increased.

We can now clearly see the truth of the statement that, although from the figures relating to the total population it would appear that there was less illiteracy in the country than the city, when we separate the classes, we find that in every case the level of education rises with the increasing size of city. This apparent contradiction is due to the different composition in nativity of the population in the various cities and towns. The discrepancy would be still greater if we considered that, generally, the males were better educated than the females, and that the greatest proportion of males was in the country.

Families and Dwellings.—There is, of course, no question about the relative number of persons to a dwelling in city and country; for the apartment house, with its large number of occupants, is seldom found outside a city. But it may be of interest to discover whether the size of family is larger in the one place or the other. Table XIII. will answer this.

TABLE XIII.

NUMBER OF PERSONS TO A FAMILY IN NEW ENGLAND IN 1900 ON BASE OF 1,000.

	New England.	Places over 100,000.	50,000 to 100,000.	25,000 to 50,000.	Places under 25,000.
Aggregate	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
1 person	48.6	40.3	38.3	35.2	55.2
2 persons	176.4	160.3	162.5	154.8	187.2
3 persons	195.5	181.9	194.4	187.6	200.9
4 persons	177.3	175.3	181.0	178.3	177.0
5 persons	138.9	143.8	144.4	148.1	135.0
6 persons	99.1	107.8	103.9	109.0	94.0
7 persons	65.2	73.4	69.3	72.7	60.8
8 persons	41.0	47.3	43.4	47.1	37.8
9 persons	24.4	28.4	25.6	28.8	22.3
10 persons	13.9	16.3	14.2	16.9	12.7
11 to 15 persons	16.1	20.2	17.8	18.3	14.2
16 to 20 persons	1.8	2.8	2.4	1.6	1.4
21 persons and over	1.8	2.2	2.8	1.6	1.5

In every case there are more families of 3 persons than of any other one number. In places over 25,000 the second place is held by families of 4, but in the small towns or cities families of 2 are next in order of magnitude. Places under 25,000 have the greatest number of any class in families of 3 or less, but for families of 5 or over there is not a case in which they do not have the smallest proportion. It is, then, very evident that the country is the portion of New England in which the smallest families are most frequently found. These small places contain two-thirds of the families with 2 persons or less, but only one-half of the number with 11 or over. The following figures, which are comparable with those of our recent Census,* will bring out clearly these distinctions:—

Number of Persons to a Family in New England in 1900 on Base of 1,000.

	New England.	Places over 100,000.	50,000 to 100,000.	25,000 to 50,000.	Places under 25,000.
1 person	48.6	40.3	38.3	35.2	55.2
2 to 6 persons . . .	787.2	769.1	786.2	777.8	794.1
7 to 10 persons . . .	144.5	165.4	152.5	165.5	133.6
11 persons and over .	19.7	25.2	23.0	21.5	17.1

There are exceptions in some cases; but, as a rule, it holds that, the larger the city, the more families of large size. This is caused to a considerable extent by the presence of the large hotels in the great cities. Most of the towns have one or more hotels, depending largely upon the summer trade or upon a few regular boarders; but they are almost always of small size. During certain seasons these hotels in the mountains or on the shore have a large corps of servants; but this is not permanent, like that of the city hotel.

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* Twelfth Census, vol. ii. p. clxxxi.

TABLE XIV.

SIZE OF FAMILIES IN NEW ENGLAND IN 1900.

	Number of Persons to the Dwelling.	Number of Persons to the Family.	Number of Persons to Private Family.
New England	5.65	4.46	4.33
Places over 100,000	8.24	4.73	4.53
Places 50,000 to 100,000 . . .	6.77	4.61	4.44
Places 25,000 to 50,000	6.78	4.65	4.56
Places 10,000 to 25,000	5.63	4.60	4.46
Places 4,000 to 10,000	5.15	4.43	4.31
Places under 4,000	4.40	4.14	4.01

As was stated at the commencement of this section, the number of persons to the dwelling is greater in the large cities. In fact (Table XIV.) there are almost twice as many in the cities over 100,000 as in the places under 4,000. With a single exception, where the variation is so slight that it may be nearly overlooked, there is a regular gradation, following the order of size. When we come to the number of persons to a family, the same order holds; but the differences are by no means so great. When we eliminate the hotels, schools, boarding-houses, institutions, etc., and confine the study to the number of persons to the private family, we find that the cities over 10,000 are above the average, and those under this size below the average. But above this line of demarcation there is not a regularly ascending order, corresponding to the size of cities. Those between 25,000 and 50,000 now lead, followed by the cities over 100,000. Cities between 10,000 and 25,000 hold third place. It is hard to give a satisfactory explanation of the large size of private families in cities between 25,000 and 50,000, but the following is offered. We saw (Table IV.) that these cities had a large number of native whites of foreign parents, also (Table VII.) that they had the largest number under 15 years of age, and (Table XI.) the maximum number engaged in manufacture. We know that the foreign-born have a high birth-rate, even when the difference in age classification is considered. These cities are then composed largely of a mill population, with a great number of foreigners. Their children, who are old enough, find work in the factories, and live at home with their younger brothers and sisters. This makes the number of persons to the private family extraordinarily large.

Proprietorship of Homes.—It is important to know whether in the cities or the country districts of New England a larger proportion of the population own the homes in which they live. Taking the whole area (Table XV.), about 41 per cent. own and 56 per cent. rent. There is here, as we have seen in so many cases, a connection between ownership and size of city. In cities over 100,000 about 20 per cent. own their homes, while in places under 10,000 the percentage of ownership rises to over 57. The percentage of renters, since it is very nearly the complement of the former class, changes in inverse order. This is but natural. Land in the large cities is too valuable to allow each laborer to have a plot of ground with a little house on it owned by himself. There are so many needing to live near their work that these houses must be built up tier on tier. Only wealthy individuals or corporations can afford to buy this land and erect

TABLE XV.

PROPRIETORSHIP OF ALL HOMES IN NEW ENGLAND IN 1900 ON BASE OF 1,000.

	New England.	Cities over 100,000.	50,000 to 100,000.	25,000 to 50,000.	10,000 to 25,000.	Places under 10,000.
Total	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
Owned:						
Free	241.8	90.0	123.8	131.6	188.4	370.3
Encumbered	160.7	106.4	124.7	158.2	166.0	190.7
Unknown .	9.8	2.9	4.5	8.0	7.2	15.1
Hired	559.4	766.5	715.4	673.9	613.2	397.8
Unknown . .	28.3	34.2	31.6	28.3	25.2	26.1

the necessary buildings. Hence we find the mass of the people in the large cities contented or compelled to live in these tenements. It may be that cheap or rapid transit will in time overcome this tendency in part, but this is no place to enter upon a discussion of it. In the country, on the contrary, the desire of each family is to own its own home; and, if the statistics for places under 4,000 were available, it is probable that an even larger percentage of owners would be found. In the cities over 25,000 a majority of the owned homes are mortgaged, but in the small places the opposite is true. In places under 10,000 nearly two-thirds of them are unencumbered.

When we classify the population according to nativity, some striking facts are brought out (Table XVI.). Among the native whites, 49 per cent. own their homes, while 48 per cent. rent them. The foreign whites own in 28 per cent. of the cases, the negro in 17 per cent., and the Chinese and Japanese in only 1 per cent. The Indians constitute a peculiar group, who own their homes in 67 per cent. of the cases. Among the native whites over 60 per cent. of the homes they own are free and clear, while more than half of those of the foreign whites are encumbered, 45 per cent. of the homes owned by the negroes have no encumbrance

TABLE XVI.

PROPRIETORSHIP OF ALL HOMES IN NEW ENGLAND IN 1900 CLASSIFIED BY NATIVITY ON BASE OF 1,000.

	Aggregate.	Native White.	Foreign White.	Negro.	Indian.	Chinese and Japanese.
Total	1,000.6	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
Owned:						
Free	241.8	311.6	128.9	76.2	591.7	8.3
Encumbered	160.6	168.1	150.7	91.8	72.8	1.7
Unknown .	9.8	12.4	5.6	4.0	5.2	1.7
Hired	559.5	479.1	688.2	772.3	248.1	920.5
Unknown . .	28.3	28.8	26.6	55.7	82.7	67.8

on them. The Chinese and Japanese are peculiar. They rent their homes in over 90 per cent. of the cases; but, when they do buy one, they generally pay the cash for it. They are thrifty races, and hate to run into debt. But this table, however interesting and instructive, contains an element which detracts largely from its value. The different classes are not equally distributed throughout the territory. The foreign-born are proportionally much more numerous in the cities than in the country, and it is an entirely different matter for a person of ordinary means to purchase and pay for a home in a large city than it is in a small town. It would be better to compare them for the cities of different size. The only case in which this is possible is in cities over 100,000, and accordingly this has been done.

TABLE XVII.

PROPRIETORSHIP OF ALL HOMES IN CITIES OVER 100,000 IN 1900 CLASSIFIED BY NATIONALITY ON BASE OF 1,000.

	Aggregate.	Native White.	Foreign White.	Negro.	Indian.	Chinese and Japanese.
Total	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
Owned:						
Free	90.0	120.1	68.3	24.2	62.5	6.1
Encumbered	106.4	110.1	106.6	41.2	62.5	1.5
Unknown .	2.9	3.5	2.6	0.2	0.0	0.0
Hired	766.5	725.3	795.3	869.4	812.5	928.5
Unknown . .	34.2	41.0	27.2	65.0	62.5	63.9

In these largest cities we find (Table XVII.) that 20 per cent. own their homes. The only class in which the percentage is greater than the average is the native whites, who own over a fourth of their homes. The foreign whites come next, and have done very well to have made so much progress. The negroes own in 6.5 per cent. of the cases, while the Chinese and Japanese bring up the rear with less than 1 per cent. The Indians are so few in number that they may be overlooked. The same order holds as in the previous table, but the superiority of the native whites is not so apparent. It is probable that large numbers of them, instead of renting in the city, prefer to live in a suburb and return daily to their work. This is particularly true of Boston. With regard to free ownership we note that only one-fifth of the homes owned by the Chinese and Japanese are mortgaged, while a little less than a half of those owned by the native whites are encumbered. Only about a third of the foreign whites and negroes have completely paid for the homes which stand in their names. The foreigners, however, hate a debt; and officers of savings-banks which have loaned money to the foreigners testify that, when the day of payment arrives, they are generally prompt with their interest, and often make it a point to reduce the principal at the same time.

Instead of taking, for purposes of comparison with the above, the statistics for all places under 100,000, it was thought better to introduce a table showing the ownership of farm homes in New England.

TABLE XVIII.

PROPRIETORSHIP OF FARM HOMES IN NEW ENGLAND IN 1900 CLASSIFIED BY NATIONALITY ON BASE OF 1,000.

	Aggregate.	Native White.	Foreign White.	Negro.	Indian.	Chinese and Japanese.
Total	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
Owned:						
Free	569.7	593.8	409.7	405.4	833.3	250.0
Encumbered	294.6	275.1	423.2	337.8	133.3	0.0
Unknown .	19.9	20.7	15.2	16.9	0.0	0.0
Hired	109.7	104.1	146.6	239.9	33.3	750.0
Unknown . .	6.1	6.3	5.3	0.0	0.0	0.0

Table XVIII. shows this with the same classification by nativity. Here we are struck at once with the amazing difference between the conditions of ownership in the country and the great city. 88 per cent. of the farms are owned by those who live on them. Among the native whites this reaches 89 per cent., and for the foreign white 84 per cent. Even the negro owns his farm in more than three-fourths of the cases. The Indians, Chinese, and Japanese together give a total of only 34 cases, so that they may be overlooked. Nearly two-thirds of the farm homes owned are free from encumbrance. Among the native whites this fraction is even greater. A little less than a half of the farm property of the foreign whites is unencumbered. The negroes come between these two classes, and have done well to pay for such a large percentage of their homes. The average value of the property of the white farmer in New England is $3,335, while that of the negro is but $2,205.*

Before taking up the extent to which the different nationalities have purchased farm or other homes, it is interesting to know the extent to which they are going to the country. There is a considerable number of writers who look to the foreigners to take up the deserted farms in New England. Table XIX. will show the extent to which the different nationalities are in the country.

TABLE XIX.

PRIVATE FAMILIES ON FARMS OR OTHER HOMES IN NEW ENGLAND IN 1900 ON BASE OF 1,000.

	Total Private Families.	Farm Homes.	Other Homes.
Total	1,000.0	152.1	847.9
United States or Unknown	1,000.0	243.9	756.1
Austria-Hungary	1,000.0	43.6	956.4
Canada (English)	1,000.0	112.0	888.0
Canada (French)	1,000.0	67.1	932.9
Germany	1,000.0	70.1	929.9
Great Britain	1,000.0	64.9	935.1
Ireland	1,000.0	47.0	953.0
Italy	1,000.0	16.9	983.1
Poland	1,000.0	33.3	966.7
Russia	1,000.0	14.6	985.4
Scandinavia	1,000.0	76.2	923.8
Other Countries	1,000.0	65.1	934.9
Mixed Foreign Parentage	1,000.0	73.8	926.2

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* Twelfth Census, vol. v. pp. cli–cix.

We find that, in general, a little over 15 per cent. of the private families are on farm homes. Almost one-fourth of the native families are in the country, and still constitute the bulk of our farming population. The English Canadians are the only other class which have more than 10 per cent. in the country. These are largely in the northern tier of States. The Scandinavians, Germans, French Canadians, and British follow in order; and all have over 6 per cent. on farms. The Irish, Austro-Hungarians, and Poles follow with between 3 and 5 per cent.; while the Italians and Russians bring up the rear, with less than 2 per cent. The Germans, and particularly the Scandinavians, have always taken kindly to farming since they began to come to this country; and they have contributed a fair share to this occupation in New England. The only other classes which have been willing to go there have been the English-speaking immigrants. The Irish have always shown a liking for city life. The remainder is composed of the most recent immigrants; and they have, in large part, gone to the cities. The Italians had had a bitter experience with farming in their former home, and were not willing to try it here.* Then these classes did not know our language, and life was pleasanter for them in the large cities. It may be that, when they have learned the language and accumulated some money, they will be willing to take up the deserted farms, which it would seem that the methods of agriculture with which they are acquainted render them peculiarly fitted to successfully manage.

The next question to suggest itself is how much progress the different nationalities have made in paying for their homes either in city or country. Let us first take up farm homes.

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*Report of the Industrial Commission, 1902, vol. xix. pp. 970, 971.

TABLE XX.

PROPRIETORSHIP OF FARM HOMES IN NEW ENGLAND IN 1900 BY NATIONALITY ON BASE OF 1,000.

	Total.	Owned.			Hired.	Unknown.
		Free.	Encumbered.	Unknown.		
Total	1,000.0	569.7	294.6	19.9	109.7	6.1
United States or Unknown	1,000.0	610.0	264.8	21.0	98.0	6.2
Austria-Hungary	1,000.0	296.8	579.9	0.0	109.6	13.7
Canada (English)	1,000.0	387.4	431.5	19.3	153.9	7.9
Canada (French)	1,000.0	355.8	416.1	12.6	208.9	6.6
Germany	1,000.0	366.0	489.6	10.2	129.8	4.4
Great Britain	1,000.0	454.0	360.2	14.5	164.3	7.0
Ireland	1,000.0	488.5	381.6	19.7	105.5	4.7
Italy	1,000.0	301.5	366.4	11.5	320.6	0.0
Poland	1,000.0	206.8	603.4	8.4	177.2	4.2
Russia	1,000.0	160.2	685.1	11.0	143.7	0.0
Scandinavia	1,000.0	280.0	513.1	8.3	195.6	3.0
Other Countries	1,000.0	341.5	382.2	19.5	251.7	5.1
Mixed Foreign Parentage	1,000.0	406.5	401.9	15.3	169.5	6.8

The native population own their own homes in about 90 cases in 100, and in over 60 cases they are free and clear. This is, as we should naturally expect, the best showing of any. The Irish have the next largest proportion of homes paid for. They have been coming here in large numbers for more than a half-century, and, although nearly penniless when they arrived, have accumulated considerable property in the mean time. They now own more than 10,000 farm homes in New England. The English, Germans, French, and English Canadians follow in order. None of these, with the exception of the French Canadians and Germans, had the difficulty of language to contend with, and were not, therefore, bound to their fellows in the cities. They own or hire over 20,000 farms. The Scandinavians do not make the good showing we should expect them to. Still, they control over 1,500 farms. Now follow the Austro-Hungarians, Italians, Poles, and Russians. Together they cannot claim 1,000 farms. It would be of great value if we could trace the ownership of homes back to the census of 1860, in order that we might compare the progress made in ownership by the Irish at that time with that of the Italians at present. Unfortunately, this cannot be done, as the statistics go back no farther than 1890. Since then the Austro-Hungarians, English Canadians, Russians, and Poles in this country have made gains in the proportional number of farm homes owned free; but all other nationalities show a loss. This does not mean that they are not going to the country as much as formerly, but that the farms of which they are proprietors are not entirely paid for. They are either hiring them or buying them before they can pay the whole price. The Russians, Poles, and Austro-Hungarians are not renting farms in New England to any great extent; but they are beginning to buy them by giving a mortgage in part payment. It will be interesting to watch the extent to which these mortgages will be paid during the next decade.

When we come to the proprietorship of other than farm homes, we are confronted with an entirely different set of conditions.

TABLE XXI.

PROPRIETORSHIP OF OTHER THAN FARM HOMES IN NEW ENGLAND IN 1900 BY NATIONALITY ON BASE OF 1,000.

	Total.	Owned.			Hired.	Unknown.
		Free.	Encumbered.	Unknown.		
Total	1,000.0	185.2	137.8	8.1	637.0	31.9
United States or Unknown	1,000.0	274.1	142.3	11.6	535.7	36.3
Austria-Hungary	1,000.0	43.9	109.8	1.6	815.3	29.4
Canada (English)	1,000.0	104.0	114.3	7.0	740.7	34.0
Canada (French)	1,000.0	67.9	98.3	4.3	801.8	27.7
Germany	1,000.0	123.8	193.3	5.1	653.4	24.4
Great Britain	1,000.0	128.8	137.4	5.3	703.5	25.0
Ireland	1,000.0	151.7	151.9	5.9	663.9	26.6
Italy	1,000.0	38.5	62.8	2.9	855.5	40.3
Poland	1,000.0	19.9	69.7	2.3	864.2	43.9
Russia	1,000.0	15.8	93.3	2.0	861.4	27.5
Scandinavia	1,000.0	54.1	165.5	4.3	748.1	28.0
Other Countries	1,000.0	102.1	109.1	4.5	743.0	41.3
Mixed Foreign Parentage	1,000.0	103.8	125.9	5.8	735.8	28.7

Here the homes are hired in 63.7 per cent. of the cases. Property in the cities is so valuable that a workingman cannot afford to own his own home. In the small place he may work at his trade and buy a home. In the cities more homes are owned free than encumbered, but the difference is by no means as great as in the country. In nearly 50 per cent. of the cases the native-born own their homes, and in over 27 per cent. they are free. This is the only class in which more are free than encumbered. The Irish have the next largest percentage free, and have entirely paid for more than 33,000 homes. In fact, the number of free and encumbered homes is nearly equal. They still rent over 145,000 homes. The English own free 10,841 homes. The Germans have bought more than 11,000 homes, and have paid for more than 4,500 of them. These three classes have been here the longest, and should naturally own the most. When we consider the penniless condition in which the early Irish came, their progress has been remarkable. The English and French Canadians each own over 5,500 homes free; but the English rent only 39,229 homes, while the French rent 69,194. It is, therefore, evident that the English have made the greater headway. The French Canadians are largely lumbermen or operatives in factories. They are a more migratory element than the English, returning to their homes in Canada when work gets slack. The Scandinavians are the only other class which own more than 1,000 homes free. They have, however, bought, but not paid for, nearly 4,000 homes. The Austro-Hungarians, Russians, Poles, and Italians rent their homes in more than 80 per cent. of the cases. These are the latest immigrants, and are still herded together in the poorest sections of our cities. They have not yet been here long enough to tell what progress they will make. The Russians and Poles intend to stay here, and so have every inducement to buy homes. The Italians return to their home country in much larger numbers; and their ambition is to put aside money, and not to invest it in real estate. These four groups own at present slightly over 1,000 homes completely paid for. If we include the farm homes, there are still less than 1,500 owned free. When we remember that there are nearly 160,000 of these classes in New England, we get a better idea of their progress. The Irish are less than 390,000, and yet they own free 38,000 homes. There are slightly more than 185,000 from Great Britain here, and yet they have bought and paid for 13,500 homes. The Austro-Hungarians, Poles, Russians, and Italians rent about 33,000 homes; while those from Great Britain rent in the neighborhoood of 60,000. The British rent less than twice as many, but have paid for nearly forty times as many. They own, encumbered, about four times as many. These figures give us a fair idea of the progress which has been made by the foreigners in becoming property-holders.

Summary.—The cities which in 1900 had a population of over 25,000 have increased about 400 per cent. since 1850, those from 10,000 to 25,000 over 200 per cent., those from 4,000 to 10,000 over 100 per cent., while the places at present under 4,000 have not held their own during this period.

Since 1860 the total population has increased at a continually accelerated rate.

There was an excess of about 64,000 females in 1900. In the places over 4,000 there were 4 per cent. more females than males, while in the towns under this number there were 5 per cent. more males than females. The excess of females is greatest among the negroes. Then follow in order the native whites of native parents, native-born, foreign-born, and native whites of native parents. In each class, however, there are more females than males.

The large cities have the greatest proportion in the productive age groups from 15 to 65 years. In the country districts are found the largest numbers of the old. This is particularly noticeable among the native-born, and the number of the children of this class in the country is small. The youth of the country are going to the cities on account of the greater opportunities for employment to be found in them. The cities seem to attract females even more than males.

There are more single and widowed in the large cities and more married in the small places. This is largely due to the expense of maintaining a home in the city, the attractiveness of city life to single men, and the increased opportunities for single women to obtain employment.

The numbers engaged in gainful occupations are greater in the large than the small places. The difference is greater for females than for males. The numbers in domestic and personal service, trade and transportation, and the professions, vary directly with the size of places. Those in manufacture and mechanical pursuits are concentrated in the cities between 25,000 and 100,000, while the numbers in agriculture vary inversely with the size of place.

With all classes of the population the smallest proportion of literates is found in the small places, and increases directly with the size of city.

There are 4.33 persons to the private family in New England. The number is smallest in the country, and increases almost without exception as we approach the larger cities.

The native whites own more homes in both city and country than any other class, followed by the foreign whites, negroes, and Chinese and Japanese. Among the foreign classes the Irish have made the most progress in this respect, followed by the English, Germans, English and French Canadians. The Austro-Hungarians, Russians, Poles, and Italians have acquired but little property as yet.

REVIEWS AND NOTICES.

NOTES ON VITAL STATISTICS.

The need for improvement in the collection and handling of municipal statistics is forcibly presented in two recent publications, "The Vital Statistics of Iowa," by F. I. Herriott, Ph.D., reprinted from the *Iowa Medical Journal*, and a pamphlet on "Uniform Municipal Accounting and Statistics," by Dr. E. M. Hartwell, published for the National Municipal League. Dr. Herriott points out that the laws of Iowa with regard to the registration of deaths are persistently violated, and that many of the large cities of the State have never systematically published any vital statistics whatever. The census of 1900 reported serious deficiencies in the records of deaths in many Iowa cities, as at Des Moines, where 723 deaths were registered and where the census enumerators found 127 more. The reporting of infectious diseases is still more inaccurate; and yet the urgent need for sanitary reform is indicated by high infantile death-rates, obvious even through the imperfect statistics, and by recent epidemics of typhoid fever at Fort Dodge and Marshalltown.

Dr. Hartwell's report summarizes the progress made by the Committee on Uniform Municipal Accounting and Statistics in securing comparable summaries of municipal statistics in Newton, Brookline, Cambridge, Boston, Chicago, and Baltimore, and then points out the difficulty in instituting extensive reforms along this line until the collection of the original data to be summarized is radically improved. The fundamental figures for all comparative studies, statistics of population, are notoriously inaccurate in intercensal years. Dr. Hartwell gives the following table for three leading cities:—

ESTIMATE OF POPULATION FOR 1898 BY

Cities.	Health Dept.	U.S. Labor Dept., Jan. 1, 1899.	National Municipal League Committee,—estimated on	
			Rate of Growth. 1880–1890.	Rate of Growth. 1890–1900.
Baltimore	541,000	541,000	538,312	493,094
Cincinnati	405,000	415,000	335,195	319,885
St. Louis	623,000	623,000	553,456	548,102

The case of Baltimore shows clearly the weakness of the decennial census system, but in the other instances the errors of the estimators seem inexcusable. The differences in death-rates due to the substitution of the Health Department estimates for the true population are considerable. In Baltimore a death-rate of 20.65 in 1898 was decreased to 18.82, in Cincinnati one of 16.29 to 12.86, in St. Louis one of 16.07 to 14.13. No wonder that the committee concluded "it is impracticable at present to attempt to secure uniform returns throughout the whole field of municipal statistics from any considerable number of American cities."

The Annual Report of the Board of Health of Cambridge, Mass., for 1902, contains, besides the usual valuable statistics of seasonal prevalence and fatality of the commoner zymotic diseases, some significant data regarding the small-pox epidemic of 1901–02. Of 187 cases, 83 had been vaccinated, but all of the latter were over 15 years of age. Of the unvaccinated, on the other hand, 41, or nearly half, were under 15. Of the 83 vaccinated persons, 7 died. Of these 1 had been vaccinated eight years previously, the other 6, aged 19, 31, 40, 50, 62, and 76 respectively, in childhood. The death-rate in this class was 8.43 per cent., while among the unvaccinated it was 26.92 per cent. As in most of the epidemics of 1901–02, the fatality was therefore low, but yet three times that among the vaccinated.

The Board of Health of Brazil recently published a very thorough and satisfactory review of local yellow fever statistics, by Dr. Bulhões Carvalho, entitled "Contribuição para o Estudo Epidemiologico da Febre Amarella." The author appears not to be familiar with the work of Dr. Reed and his colleagues on the transmission of this disease by mosquitoes; but this only adds to the value of his confirmatory testimony. He first shows that disinfection has failed to control the malady, since in Rio de Janeiro there were 11,808 deaths from this cause in the thirteen years, 1877–1889, before the enforcement of disinfection, and 22,506 deaths in the thirteen years, 1890–1902, afterward. The yearly variations have been controlled mainly by a single factor, the number of immigrants entering the port, as Dr. Carvalho shows by two striking diagrams, high death-rates either coinciding with or following those years in which the largest increments of non-immune population were added. From another table it appears that between 1890 and 1903 88.2 per cent. of the deaths occurred among foreigners, and 9.55 per cent. among natives, while 2.25 per cent. were unknown. Finally, curves are given for seasonal prevalence, showing a very regular maximum in the autumn months of February and March, corresponding well with the maximum temperature which most favors the development of mosquitoes. The seasonal distribution is so well marked that the average figures given are worth quoting for record.

DEATHS FROM YELLOW FEVER IN RIO DE JANEIRO BY MONTHS, 1851–1903.

January.	February.	March.	April.	May.	June.
5,941	10,988	14,926	9,542	5,282	2,756

July.	August.	September.	October.	November.	December.
1,318	704	426	416	672	1,501

In the *Journal de la Société de Statistique de Paris* for July, 1902, Clement Juglar makes a valuable contribution to the question, "Y a-t-il des périodes pour les mariages et les naissances comme pour les crises commerciales?" He shows by a tabular and graphic analysis of the birth statistics for Paris, London, France, England, Prussia, and the German Empire that simultaneous waves of increasing and decreasing birth-rates have swept over Europe with remarkable uniformity. From 1850 to about 1870 the number of births was increasing,—from 884,000 to 931,000 in France and from 593,000 to 938,000 in Prussia. The Franco-Prussian War caused a decrease to 767,000 in France and 832,000 in Prussia. Then came a period of increase up to 1876 in France and Germany and up to 1884 in England, with a reaction following the panics of 1873 and 1882. Germany since 1881 and England since 1890 have shown an increase, while the French rate with minor fluctuations has continued to fall. The movements in the various countries, considered certainly roughly, correspond; but the proof of their connection with financial crises is not quite as clear as might be desired.

Professor Kruse and Dr. Laspeyres contribute a suggestive review of the "Fortschritte der öffentlichen Gesundheitspflege in Rheinland-Westfalen während der letzten Jahrzehnte" to the *Centralblatt für allgemeine Gesundheitspflege*, vol. xxii., Parts 1 and 2. The authors compare in great detail the statistics of these provinces for the periods 1878–83 and 1893–98, and show in the main a most satisfactory improvement. The death-rate in the various age classes from 3 to 10 has decreased by from 10 to 40 per cent. of its original value, but under one year a slight increase from 164.0 per 1,000 births to 167.5 is recorded. Of the specific diseases the typhoid rate has decreased from 4.1

per 10,000 to 1.5, and the scarlet fever rate from 6.9 to .9. Diphtheria was equally prevalent in both periods; but, taking the years 1895–99 after the introduction of anti-toxine, there was a marked decrease. While tuberculosis has greatly fallen off, "diseases of the lungs" have increased. Combining the two, a 15 per cent. decrease appears. Heart disease, urinary disease, and nervous diseases have all diminished. Only cancer and suicide show marked increase on the face of the returns. Analyzing the statistics by districts, it appears that the improvement has been greatest in those of an urban character. This is especially true for tuberculosis, 26 purely rural districts showing rates of 63 and 60 for the two periods, while those for the 12 cities were 88 and 69.

The same periodical contains an elaborate study, entitled "Die tödtlichen Unglücksfälle in Preussen im Vergleich mit einigen anderen Staaten," by Dr. Prinzing, of Ulm. The author discusses the sources of error in such statistics from the difficulty of separating accidental deaths from murder and suicide, especially among young children. In Prussia the ratio of deaths from accident to 100,000 inhabitants was 64.1 for men and 15.2 for women for 1896–1900, less than for 1876–80, but more than for 1891–95. By age periods the rates per 100,000 living reach maxima of 82.8 for males between 2 and 3 and 55.1 for females between 1 and 2, decrease up to 15 years, and then increase again. Similar figures are quoted for Italy and England. The causes of death are then examined in detail by age and sex. Drowning is most common, causing a rate of 51.4 among males between 5 and 15. Falls affect the higher age periods, and burning and scalding cause a high death-rate among women. Comparing urban and rural districts, it appears that deaths by accident are more abundant in the country than the city except during the first year of life, when the reverse is the case.

Dr. W. J. Barclay, in the *Lancet* for Sept. 19, 1903, discusses "Tuberculosis and Cancer in New Zealand," comparing particularly the death-rates for those diseases in New Zealand and in England and Wales. Tuberculosis is not much more than half as prevalent in the colony, in spite of the fact that young adult males are in excess. Thus the rates for all tuberculous diseases from 1891 to 1900 were 10.55 in New Zealand and 20.10 in England and Wales, and for pulmonary tuberculosis 7.99 and 13.91, respectively. This is attributed to the temperate climate, outdoor life, and prosperity of the Australian community. For cancer the New Zealand rate is only slightly lower than that for England; and in both countries it is apparently on the increase. The inaccuracy of crude death-rates is well shown by the following table:—

DEATH-RATE FROM CANCER PER 10,000 PERSONS IN 1896.

New Zealand.						England and Wales.		
Crude.			Corrected to English Standard.					
Persons.	Males.	Females.	Persons.	Males.	Females.	Persons.	Males.	Females.
5.50	5.49	5.51	6.67	5.54	7.74	7.60	6.15	8.96

The Milroy Lectures for 1903 were delivered by Dr. H. Timbrell Bulstrode, on "The Causes, Prevalence, and Control of Pulmonary Tuberculosis," and, as published in the *Lancet* for July 11, July 25, August 1, and August 8, furnish a store of statistics relating to the "great white plague." In the first lecture the author quotes the figures gathered by Reincke at Hamburg and Körösi at Budapest, to show the heavy incidence of tuberculosis upon the poorer classes, and discusses various rather unsatisfactory attempts to show a close connection between this disease on the one hand and alcoholism and insanity on the other. In the second lecture statistics are given *in extenso* for a number of European countries, showing in general a steadily decreasing death-rate. Norway, Ireland, Italy, and France form apparent exceptions, the latter country showing a steadily high mortality from tuberculosis and "chronic bronchitis," a popular euphemism for the same disease. On the other hand, in Prussia a death-rate which was 31 in the census years, 1876, 1881, and 1886 has fallen to 27 in 1891, 22 in 1896, and 19 in 1901. Some of the general results may perhaps be summarized as follows, though the figures for different states are not of course accurately comparable:

DEATH-RATE PER 10,000 FROM PULMONARY TUBERCULOSIS.

Locality.	Period.	Rate.	Period.	Rate.
Saxony	1873-1875	23.1	1896-1900	19.3
Amsterdam	1854-1856	27.0	1897-1901	17.7
Copenhagen	1870-1874	34.2	1899-1901	16.6
Budapest	1875-1879	83.1	1895-1899	38.4
Switzerland	1876-1880	23.4	1896-1900	18.9
Lisbon	1881-1885	41.8	1896-1900	35.3
New York	1875-1879	38.3	1895-1899	26.0
London	1875-1879	25.5	1895-1899	17.6
Australasia	1871-1875	10.1	1896-1898	9.3
Scotland	1883-1887	20.5	1898-1900	16.7

C.-E. A. WINSLOW.

RECENT STUDIES OF INFANT MORTALITY.

The *Centralblatt für allgemeine Gesundheitspflege,* vol. xxii., Parts 1 and 2, contains a brief paper by Dr. Dietrich on "Säuglingsernährung und Wöchnerinnen-Asyle." The author obtained reports from 628 women of the poorer class in Cologne who had been patients at the Lying-in Hospital, which showed that 50.9 per cent. of the children had been nursed at the breast alone for three months, and only 21.5 per cent. for nine months. Among those who received such natural nourishment for less than three months, 37.3 per cent. died in the first year, while of the rest only 8.1 per cent. died.

Dr. F. Prinzing in the Third and Fourth Part of the same volume studies "Die angebliche Wirkung hoher Kindersterblichkeit im Sinne Darwinischer Auslese," controverting the view of Oesterlen that countries having a high infant mortality show more resistance among those surviving, due to more rigorous selection. He compares first the infantile rate with the rate between one year and five in various countries of Europe, in the provinces of Prussia and Austria and the cantons of Switzerland, with the result that no inverse relation appears. Comparison of infant mortality with tuberculosis rates and with the proportion of recruits fit for military service yields similarly negative results, and Dr. Prinzing closes with an able discussion of the causes of infant mortality, in which he shows that the diseases of the digestive canal and the respiratory tract mainly contributory to it do not specially affect children of generally weak constitutions, and that the infantile death-rate could not therefore be expected to be a selective one.

In the *Deutsche Vierteljahrsschrift für öffentliche Gesundheitspflege,* vol. xxxv., Part 2, is a valuable review of "Die Säuglingssterblichkeit und die Massregeln öffentlich-hygienischer Art, die zum Zwecke ihrer Herabsetzung genommen werden können," by Dr. A. Würtz, which begins with a compilation of the statistics of this subject as collected by Eröss (*Zeitschrift für Hygiene,* xix.) and others. The infantile mortality in thirteen European countries (deaths under one year per hundred births) was found to vary from 9.7 in Ireland to 28.7 in Bavaria, averaging 18.87. In 1899 the rates for the 29 German cities of over 100,000 population ranged from 15.4 in Frankfort-on-Main to 32.0 in Chemnitz, and averaged 22. Of this great mortality, moreover, about a third occurs in the first month. In Berlin the rate for the first month was 16.29, and for the twelfth only 1.68, with a steady fall between. A rather close connection exists between the birth-rate and the infantile mortality (per 100 born) in various countries; and among families the same relation was shown by Neumann for Danish families, as follows:—

No. of children in family .	1	2	3	4	5	6	7	8	9 and more
Deaths per 100 births . . .	20.0	19.1	25.1	23.4	24.5	31.1	35.8	40.3	52.5

Probably the high birth-rate and the high mortality are independent effects of general economic conditions. By social grades the infantile mortality was found by Wolff to vary from 8.9 in the higher classes to 30.5 among the artisans. Dr. Würtz considers the enormous death-rate among illegitimate children, and then takes up the question of the causes of infantile mortality. From 30 to 60 per cent. of the deaths of young children are due to digestive derangements, according to various observers; and these occur almost entirely among the children denied their natural nourishment. The following table is quoted for Berlin:—

Food Supply.	Deaths from Diseases of the Digestive Tract.	
	Legitimate.	Illegitimate.
Mother's milk	1.3	1.6
Mixed human and animal milk,	7.9	23.7
Animal milk alone	18.7	29.9
With milk substitutes	51.1	71.9

Finally, it is in summer, when the bacteria in milk find opportunity for most excessive development, that the mortality is greatest.

Deaths from Diarrhœa in 1899 in German Cities with over 15,000 Inhabitants. Rates per 10,000 Inhabitants.

Jan.	Feb.	March.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
2.0	3.0	3.0	3.0	6.0	9.0	28.0	60.0	30.0	7.0	4.0	3.0

All these facts should be well known, and their practical importance is so great that they cannot be too often emphasized.

The *Centralblatt für allgemeine Gesundheitspflege*, vol. xxii., Parts 5 and 6, contains a somewhat similar paper by Dr. Arthur Keller on "Säuglingssterblichkeit und Säuglingsfürsorge." He quotes from Maurel an interesting analysis of deaths during the various parts of the first year:—

AVERAGE NUMBER OF DEATHS PER DAY IN FRANCE IN 1895.

0-4 Days.	5-9 Days.	10-14 Days.	15-30 Days.	2d Month.	3d Month.	4th-6th Month.	7th-12th Month.
4,341	1,738	1,249	1,210	638	490	311	188

The author, like Dr. Würtz, believes that the proportion of infantile mortality due to digestive disorders is commonly much underestimated as a result of defective diagnosis, and holds that these causes probably account for 70 to 80 per cent. of the total deaths under one year.

Dr. John Tatham contributes some tables of "Infant Mortality" to *Public Health* for October, 1903, which show that the rate of deaths under one year to 100 births has during the last ten years ranged above and below an average of 16.8 for males and 13.8 for females, showing no general tendency toward a decrease. Diarrhœal diseases added 2.9 to the rate for males and 2.5 for females, a much lower proportion than that given by the German authorities.

Another contribution to the same subject is a study of "The Factors which determine the Local Incidence of Fatal Infantile Diarrhœa," at Croydon, by Dr. H. M. Richards in the *Journal of Hygiene* for July, 1903. That infantile mortality has been increasing from this cause is well shown by the following figures:—

DEATHS UNDER ONE YEAR PER 100 BIRTHS.

	Total.	Diarrhœa and Enteritis.	Other Causes.
1883-1887	11.8	1.6	10.2
1888-1892	11.6	1.0	10.6
1893-1897	14.2	2.5	11.7
1898-1902	14.3	3.8	10.5

For the ten years, 1893-1902, the rate for diarrhœa and enteritis was 3.1; and of this the third quarter of the year contributed 2.6. Among breast-fed children the author computes the death-rate per

100 from diarrhœal diseases during the first six months of life as .5 among the entirely breast-fed, 3.5 among those fed on condensed milk, and 3.8 among those fed on cow's milk. Dr. Richards is inclined to invoke the influence of polluted soil as a contributory cause in the infection of milk.

In all the papers cited the danger from an ordinary city milk supply and the advantages of mother's milk are made very evident. The possibility of a proper artificial milk supply is considered by Dr. G. F. McCleary in the *Lancet* for Oct. 3, 1903. He points out that the low death-rate among breast-fed children may be due not only to their freedom from infection, but also to the acquisition of specific immunizing bodies transmitted according to Dr. Welch through the mother's milk. When, however, this natural nourishment cannot be had, modified and sterilized milk furnishes a fair substitute. Dr. McCleary examines the statistics of children fed on such milk supplied from a public station in Battersea, and shows that, while the death-rate per 100 births in the whole borough (excluding deaths in the first seven days) was 11.89, that among the dépôt-fed children (excluding those taking the milk for less than a week) was 6.34. This is an admirable showing, considering that most of the children receiving the modified milk were under six months old, many were sick, and a high proportion illegitimate, while of course many of the children outside were fed at the breast in a normally healthy way.

C.-E. A. Winslow.

CENSUS WAGE INQUIRY.

Employees and Wages. By Davis R. Dewey. *Special Report, Twelfth Census of the United States.* Washington, 1903. pp. cxv, 1228.

This report is the result of a special inquiry planned by Mr. S. N. D. North in regard to the wages of individual employees in a number of selected manufacturing establishments in the United States for the years 1890 and 1900. For several censuses the problem of making a statistical presentation of the wages of workmen has been one of increasing difficulty. The reasons for this have been clearly recognized by the census officials. In brief, the difficulties in the interpretation of census wage statistics are due:—

(1) To the lack of information in regard to the precise character of the work performed by each employee, and the consequent inability to distinguish between the skilled and unskilled laborer. If there

had been a change in the proportion of skilled and unskilled labor between two given periods, comparisons based upon the use of figures returned for the total number of employees, regardless of occupation, would be seriously impaired.

(2) To the difficulty of determining the exact number of employees among whom a given amount of wages is distributed, and the consequent impossibility of deriving a satisfactory term which will express the earnings of an individual employee.

(3) To the disregard, in the statistics of earnings, of the working time of the individual.

In addition to these fundamental defects it is to be noted that the only kind of statistical wage term derived from the census data is an average which is necessarily of so crude a character that the census authorities, in the introduction to the Report on Manufactures of the Twelfth Census, very wisely discountenanced its use.

The principles controlling the present investigation were briefly as follows:—

(1) The restriction of the inquiry to a few stable and normal industries.

(2) Collection of actual rates of wages.

(3) Classification of employees by rates of wages and, as far as possible, by occupations.

The present inquiry is concerned primarily with rates, earnings being used only when the data in regard to rates are defective or require further interpretation.

In the collection of data care was taken to select essentially manufacturing localities. In all 34 industries are covered, nearly all of a permanent character, which are not violently affected by seasonal influences.

The material used in the inquiry was derived from the pay-rolls of employees. Only in this way was it regarded possible to secure returns from all the constituent elements in the given establishments. This method removes all opportunity for either exaggeration or undervaluation, and also to the possibility of substituting a customary wage for the actual one. Special effort was made to select establishments which may be regarded in every way representative. The number of pay-rolls in the compilation of the tables was 720.

In the tabulation of the statistics two methods of grouping were followed: one was the assumption of returns for a given group without regard to establishments' lines for the purpose of making classified tables of wages for particular occupations with appropriate grouping according to the section of the country; the other method is to treat a given establishment in a given industry as uniform, and classify all the workmen within this unit according to the wage received. The number of occupations separately tabulated was 318 for males and 82 for females.

In classifying the wage statistics, the group method, instead of the use of the average, was adopted. In order to facilitate the compilation of the two given sets of returns so as to ascertain what changes had taken place, the term "cumulative percentage" was introduced. The cumulative percentage represents the proportion of the total number of persons in a given table receiving a wage as great as, or greater than, the lowest wage of the given wage group.

The use of the columns of cumulative percentages makes it easy to determine the range of wages for any given proportion of the working force. By this means, also, it is possible to indicate the wage group of the employee who stands half-way between the lowest-paid and the highest-paid employee in the class under consideration. By the use of the median, employees at exceptional rates, either low or high, are not given an undue weight or importance, as they are when the average is used.

Another advantage of the cumulative percentage lies in the facility in showing the wages of the employees who stand at selected points along the whole series of employees, as, for example, at one-quarter and three-quarters up the ascending scale. The terms at these particular points are called "quartiles," and within these two limits would clearly fall the wages of at least one-half of the working force.

In order to present the results derivable for the detailed tables in a form in which they can be readily compared, summaries have been made showing the median and quartiles for all the tabulations of the occupational occupation. It should be noted, however, that the basis of comparison furnished by the medians and quartiles is not always satisfactory. Particularly is this true where the numbers are small or the workmen employed are massed at a few rates widely separated one from another. Accordingly, in the analysis of the tables the significance of the median and the quartiles has in every case been tested by reference to the complete cumulative percentages; and from the detailed tables the reader can form an independent judgment regarding the changes which have taken place.

The results of the inquiry in part are summarized as follows:—

Cotton Manufacturing.—Wages of both men and women increased in the New England States between 1890 and 1900. In the Southern States there was, on the whole, but little change. For males the range of wages of the middle half of the working force in cotton mills in New England in 1900 was $6.50 to $12 per week as compared with a range of $6 to $11 in 1890. In the Southern States the range was $4.50 to $7 per week in 1900 as compared with $4.50 to $7.50 in 1890. The rates of wages for the middle 50 per cent. of female spinners in New England ranged from $5 to $6.50 in 1900 as compared with $4.50 to $6.50 in 1890. For female weavers the range was $6.50 to $9 in 1900 as compared with $5.50 to $8 in 1890. In the Southern States rates for the latter occupation were slightly higher in 1900 than in 1890.

Woollen Industry.—Most of the returns are for the New England States. The wages of both men and women in this section increased. In 1900 the range of the middle half for males was from $6.50 to $11.50 as compared with $6 to $11 in 1890, and for women from $6 to $9 per week as compared with $5 to $8 in 1890. The range of wages of male weavers increased from $6.50 to $9.50 in 1890 to $7 to $11 in 1900. For female weavers the range was raised from $6.50 to $9 in 1890 to $7 to $10 in 1900, and for female spinners from $4.50 to $6.50 in 1890 to $6 to $7 in 1900.

Dyeing and Finishing Textiles.—There was an increase for males in the New England States, and a decrease in the Middle States. For females there was but little change. Wages in carpet and knitting mills show little change between 1890 and 1900.

Agricultural Implements.—Nearly all of the returns for agricultural implements factories relate to the Central States. With few exceptions there has been an increase in the several occupations. For assemblers the range for the middle half was from $10.50 to $14.50 in 1900 as compared with $10.50 to $14 in 1890; for carpenters and hand woodworkers the wages of the middle half were from $11.50 to $14 in 1900 and from $10.50 to $13.50 in 1890; for general laborers, from $9 to $10.50 in 1900 and from $7 to $10 in 1890; for metal machine operatives the range was from $9 to $14 in 1900 and from $9 to $12.50 in 1890; for journeymen machinists wages in 1900 ranged from $13.50 to $16, and in 1890 from $12 to $16; and for moulders a decrease is shown from $12 to $19 in 1890 to $10 to $15 in 1900.

Furniture Factories.—The wages for the industry as a whole declined in the Middle States. Rates of cabinet-makers, however, remained stationary, and finishers show a slight increase. In the Central States there was but little change.

Lumber and Planing Mills.—Reports principally from the Central and Pacific States show a slight increase for the industry as a whole. In the Central States the range of the middle half was from $8 to $10 in 1900 as compared with $8 to $9.50 in 1890. In the Pacific States in 1900 the range was from $10 to $14.50, and in 1890 from $10 to $15.50.

Carriages and Wagons.—There was a slight increase in the Middle and Central States, from which sections the bulk of the returns are derived. In the Middle States the range of wages for the middle half was from $11 to $16.50 in 1900 and from $10 to $16.50 in 1890. In the Central States the range was from $7 to $11 in 1900 and from $6.50 to $11 in 1890. The considerable difference in height of wages between these two sections is caused by a difference in the nature of the goods produced by the factories from which reports were obtained.

Car Shops.—Rates in the Middle States fell during the decade. In 1890 the range of the middle half was $7.50 to $13.50, and in 1900 $7 to $12. In the Southern States there was little change. In 1890 the range was $5.50 to $12, and in 1900 $6 to $12. In the Central States there was a decline from a range of $9.50 to $17 in 1890 to $9 to $15.50 in 1900. The wages of machinists in this section, however, increased from $13 to $16 in 1890 to a range of $14 to $16.50 in 1900.

Foundries and Metal Working.—As a whole, there appears to have been little variation in rates, although in particular occupations there were changes of greater or less magnitude. Wages are highest in the Pacific States, the middle half in that section drawing from $12 to $18.50 per week in 1900 as compared with $10.50 to $19.50 in 1890, and lowest in the Southern States, where the range of the middle half in 1900 was from $6 to $13, and in 1890 from $7.50 to $14.50. In this industry twenty-eight different occupations are separately shown. Blacksmiths in the Middle States show considerable decrease, the range in 1900 being from $13 to $18.50 as compared with $15 to $22 in 1890. Boiler-makers in the same section drew from $10 to $15.50 per week at both periods. Floor moulders in the Central States in 1900 ranged from $15 to $21 per week as compared with $14.50 to $18.50 in 1890. Three classes of machinists are shown. The middle range for journeymen machinists, including tool-makers and metal pattern-makers in the New England States, was from $11 to $15.50 per week in 1900, and in 1890 from $11.50 to $15.50; in the Middle States in 1900 from $12 to $16.50, in 1890 from $13 to $18.50; in the Southern States from $12 to $17 in 1900, and from $12.50 to $17 in 1890; in the Central States from $12 to $16 in 1900, and in 1890 from $12 to $15.50; and in the Pacific States the range in 1900 was from $17.50 to $21.50, in 1890 from $18 to $21. Erectors and assemblers in the Middle States ranged in 1900 from $11 to $15.50, slightly lower than in 1890; in the Central States the range is from $9 to $14 in 1900 as compared with $7.50 to $12.50 in 1890. The third class, composed of machine tenders and machinists of less skill, in New England in 1900 ranged from $8 to $12.50, in 1890 from $7.50 to $12.50. In the Middle States in 1900 the range was from $7.50 to $12.50, and in 1890 from $9 to $14. In the Central States the range in 1900 was from $7.50 to $12.50 as against $5 to $11 in 1890.

Iron and Steel.—Reports include blast furnaces, puddling furnaces, rolling mills, Bessemer converters, and open hearth furnaces. Owing to the prevalence of turn or tour duty in this industry, the rates given are for two weeks' work instead of a single week. In the Middle States the middle half were paid at rates from $15 to $27 in 1900 and from $15 to $28 in 1890 for the two weeks' work; in the Southern States the middle range at both periods is from $13 to $26; and in the Central States at both periods the rates are about the same, the middle half ranging from $21 to $30 in 1900 and from $21 to $31 in 1890.

Ship-yards.—There was a decrease in wages in the New England and Pacific States. In the former section the range of the middle half was $15 to $18.50 in 1890 and $11.50 to $15 in 1900, in the Pacific States $12 to $20 in 1890 and $10.50 to $17 in 1900. In the Middle States there was an increase, the range rising from $8 to $14.50 in 1890 to $9 to $15.50 in 1900. There was little change in rates in the Central States.

Breweries.—Returns are principally from the Middle and Central States. The figures for these sections, as well as for the sections from which only a few returns were received, show an increase in wages for the decade. In many establishments there was also a reduction in the working time, and the hour rates show a much greater increase than the week rates.

Cigar Factories.—Wages are practically unchanged in the New England States, but considerably higher in 1900 in the Middle States. The range for the middle half in the latter section was from $6.50 to $12.50 in 1890, and from $8 to $13 in 1900.

Clothing Factories.—Returns indicate a decrease in the wages of men, and also (though less marked) in the wages of women. Most of the returns are from the Middle States; and in that section there is little change in the rates for women, but for men the range of wages of the middle half was $7 to $16.50 in 1890 as compared with $5.50 to $14.50 in 1900.

Flour Mills.—There was practically no change in wages between 1890 and 1900.

Glass Factories.—Returns are principally from the Middle and Central States. In the former section the range of the middle half for blowers was from $22 to $29 in 1890, and from $22 to $26 in 1900. For gatherers it was $9 to $14 in 1890, and $11.50 to $14.50 in 1900. When all occupations are combined, the range is $7.50 to $15 in 1890 and $6 to $14.50 in 1900. In the Central States a marked increase in rates is shown, the range of the middle half for blowers being $19.50 to $28.50 in 1890 and $22.50 to $30.50 in 1900; that for gatherers, $11 to $15,50 in 1890 and $12 to $22.50 in 1900; and that for all occupations, $7.50 to $16.50 in 1890 and $8 to $18.50 in 1900. In this industry a large number of boys are employed, and their rates show an increase for the decade.

Paper Mills.—There has been little change in the wages of men between 1890 and 1900. For women there is a slight decrease, due mainly to changes in the goods made, wood pulp having largely superseded rags as material.

Printing Industry.—The change from hand to machine composition between 1890 and 1900 makes a comparison of wages very difficult. If all the machine compositors reported in 1900 are included, however, the comparison indicates an increase in wages.

Shoe Factories.—Returns sufficiently large for comparative purposes are presented for shoe factories in the New England, Middle, and Central States. In the New England States there was a slight decrease during the decade; in the Middle and Central States rates were higher in 1900 than in 1890, the range for the middle half in the former section being from $6 to $13.50 in 1890 and from $7 to $14.50 in 1900, while in the Central States the range was from $5.50 to $14.50 in 1890, and from $6.50 to $15.50 in 1900.

Leather.--Important changes in process took place during the decade, and machinery largely displaced skilled hand labor. As a result wages were lower in this industry in 1900 than in 1890.

NOTE ON STATISTICS OF PROSTITUTION IN CUBA.

(The following note is of interest as confirming and roughly measuring the common statement that prostitution in Cuba is almost confined to the class of foreign-born women. It was prepared for, but not included in, the Census of Cuba, 1899, and is now published in the belief that any statistical information about a class, of which little is known, and regarding the legal treatment of which opinions differ radically, is worthy of preservation.)

During the tabulation of the occupation returns for the Cuban census of 1899 it was remarked that in the city of Habana a certain number of women had reported their occupation as that of a prostitute. This raised the question whether it was desirable to recognize this occupation in the tables. The attitude of the United States Census Office, the practice of which was followed in that census, is stated in the following extract from "Remarks on the Table of Occupations" contained in the United States Census:*—

> The following tables embrace gainful and reputable occupations only. All persons whose means of livelihood are criminal, or, in the judgment of mankind, shameful, are excluded.
>
> The reason for excluding gamblers, prostitutes, keepers of brothels, and such persons from the Tables of Occupations, has not been found in any sensitiveness at the mention or recognition of these classes as actually existing in the community, but in the consideration that, from the necessity of the case, the numbers thus reported must be wholly inadequate to the fact, and that a seeming count of them in the census would have the effect to mislead rather than to instruct. Here and there, at the enumeration of the Ninth Census, such persons had the assurance to report themselves by their true designations, or assistant marshals took the responsibility (and in some cases the risk) of writing down the real occupation of members of these classes who had sought to misstate their avocations or to disguise them under ambiguous terms; but an analysis of the schedules soon made it evident that this had not been done, as indeed was not to be expected, with such uniformity as to secure even approximately correct results. All such titles are therefore dropped. Some from these classes may have taken refuge, through false statements, in one or another of the occupations of good repute (notably keepers of brothels as "boarding-house keepers," a euphemism familiar to the compilers of city directories); but as a general rule, where the calling was not correctly given, it was wholly withheld, and it may therefore be assumed that substantially the whole body of persons pursuing disreputable and criminal occupations are omitted from these tables.

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* Census of 1870, Population and Social Statistics, p. 659.

While these remarks still hold good with reference to the total number of persons engaged in such an occupation, yet with the methods of tabulation introduced since the passage was written, whereby the returns regarding any group may be readily analyzed, it is possible to get valuable information from returns confessedly very incomplete. Accordingly, it was decided to distinguish this occupation in tabulating the returns for the city of Habana and the province of Santa Clara, where also a number of such returns were found on the schedules.

Under the terms of a Cuban law promulgated July 17, 1877, all prostitutes were to be inscribed in the register, to pay a fee, and to receive a certificate of enrolment. All houses of prostitution were to be licensed and to pay a monthly fee, being divided for that purpose into classes, for which the fees differed. This system was continued as a hygienic measure by the United States military authorities. Efforts to supplement the scattering returns in the censuses were therefore made by a request through the Director of Police at Habana to the authorities of each municipal district that they would report the number, race, and nativity of all registered prostitutes.

Of the 132 municipalities, 109, or nearly five-sixths, replied to the request for supplementary information; and from 23 municipalities no report was received. The municipalities which did not respond included by the census 201,126 people, or 12.8 per cent. of the population. The reports received, therefore, refer to municipalities embracing about seven-eighths of the population of Cuba and all the cities of over 10,000 people. Of the 109 municipalities reporting, 84 reported no registered prostitutes, while 25 reported numbers ranging from 3 to 1,441. The 84 municipal districts which reported no names include a population of 623,123. The 25 which reported names embrace a population of 748,538; that is, for the population reporting about 45 per cent. reported no registered prostitutes, while 55 per cent. reported registered prostitutes. The 25 municipal districts reporting names on their registers contained rather less than half (47.6 per cent.) of the population of the island. The total number of registered prostitutes reported was 2,123, more than two-thirds of whom were in the city of Habana. While doubtless this number represents only a minimum limit to the total number of persons engaged in this occupation, yet there is no apparent reason for supposing that the omissions were proportionately greater with one race than with the other, with the native than the foreign born, or with one age group than another. Consequently, the race, nativity, and age distribution of these 2,123 women probably does not differ very much from the proportion that would be established if all persons of this class could be included in the tables. Of the total number 1,511 were white, and 612 were negro or mulatto; that is, rather over seven-tenths (71.2 per cent.) of these women were white, and rather less than three-tenths (28.3 per cent.) were negro. As the white females constitute about two-thirds (64.6 per cent.) of the total female population, and the negro females nearly one-third (35.4 per cent.), it would seem that prostitutes are recruited about as much from one race as the other; but, owing to the incompleteness of the returns, no more specific inference is warranted. Of the total number, also, 1,477 were returned as native and 646 as foreign born. The best basis with which to compare these numbers is apparently the total number of native and foreign born women 15 years of age and over. The foreign-born colored women are not returned by age groups; and therefore, to get such a basis of comparison, it has been necessary to assume the following proportion: The foreign-born white females of all ages (26,358) are to the foreign-born white females under 15 (2,548) as the foreign-born colored females of all ages (6,458) are to x; *i.e.*, the foreign-born colored females under 15. In this way the fourth term is found to be 624. On this assumption the native females are 443,376, and the foreign-born females are 30,269. It follows that, in Cuba there are 33 prostitutes registered to every 10,000 native women at least 15 years old and 218 to every 10,000 foreign-born women at least 15 years old. That is, the proportion of this class among the foreign-born women is between six and seven times as great as among the native women.

As nearly two-thirds of the prostitutes were reported from the city of Habana, a similar comparison for the population of that city has been made. The total number of native women at least 15 years old was 87,516, and the total number of foreign-born at least 15 years old was 11,526. The total number of native registered prostitutes was 924, the total number of foreign-born registered prostitutes 517. Hence to every 10,000 adult foreign-born women there were 449 registered prostitutes, while to every 10,000 adult native women there were only 106. It would seem that in Habana this class is recruited from the foreign-born to more than four times the amount that it is from the natives.

Incomplete returns for the province of Santa Clara were tabulated by the census. A total of 244 persons were found in that province who admitted to the enumerators that they followed this occupation. Assuming the proportion already explained in order to estimate the number of adult native and foreign born colored, it appears that in Santa Clara province there were 20 registered prostitutes to every 10,000 adult native white women, 29 to every 10,000 adult native colored women, and 56 to every 10,000 adult foreign-born white women. The figures for the city of Habana and the province of Santa Clara seem to conflict with those previously given for the whole island. From the figures for the whole island it appears that prostitution is from six to seven times as common among foreign-born women as among natives; from the figures for Habana city it appears that it is from four to five times as common among foreign-born women as among natives; and, finally, from the figures for Santa Clara province it appears that it is not quite three times as common among the foreign-born white women as among the native white women. These results seem on their face inconsistent. Yet they may be harmonized in case most of the foreign-born women are living in those 25 municipal districts which have reported registered prostitutes. To test this, the number of foreign-born white females in these 25 municipal districts has been found. There were 19,334 foreign-born white females in these districts, and in the whole island only 26,358. In other words, 73.3 per cent. of the foreign-born white females on the island were in some one or other of these 25 municipal districts, although less than half of the population of the island (47.6 per cent.) resided there. Applying similar calculations to the foreign-born white males, it appears that two-thirds of them (66.5 per cent.) live in some one or other of the 25 districts reporting registered prostitutes. One may safely infer that immigration and registered prostitution are characteristic rather of urban than of rural Cuba. On the whole it appears from the fragmentary data that the proportion of foreign-born registered prostitutes is decidedly greater in Habana than it is in other parts of the island, but that in general the likelihood of foreign-born white women becoming enrolled in this class is at least two to three times as great as of native white women.

In 759 cases the age was reported. From these the following table has been prepared. It gives the total number of women on the island belonging to a certain age group, the total number of registered prostitutes known to belong to the same age group, and the number to every 10,000 women of that age group.

Age Period.	Female Population.	Registered Prostitutes.	Registered Prostitutes to Every 10,000 Females.
15-19	93,689	198	21
20-24	73,951	293	40
25-29	64,199	151	24
30-34	54,789	66	12
35-39	45,715	24	5
40-44	38,036	16	4
45-49	26,727	6	2
50+	76,539	5	1
15+	473,645	759	16

From this table it appears that the greatest prevalence of prostitution is at the ages of 20 to 24; that the five years immediately preceding and following are characterized by a prevalence about one-half that of the maximum; that the ages 30 to 34 show about one-half the rate of the ages 25 to 29, and the ages 35 to 39 about half that of the preceding quinquennial group. Whether this rapid decrease in the prevalence of prostitution with advancing years is due to persons passing out from it to other occupations or to the high mortality characteristic of this class, or to both, the figures do not enable one to ascertain.

The conclusions of this note may be summarized as follows:—

1. Registered prostitutes are reported in 25 municipal districts, including all the large cities of Cuba and nearly half the population.

2. The two races are represented in this class in about the same proportions as in the general population.

3. This class is most common in those parts of the island, especially urban districts, where the foreign-born are most largely represented.

4. In the capital this class comes from foreign-born women to about four times the degree that it does from native women. In other parts of the island the difference is probably less marked.

5. The maximum proportion in this class is found between the ages of 20 and 25, and the proportion at each of the three succeeding five-year periods is about half that of the group immediately preceding.

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JUVENILE LAW-BREAKERS IN BOSTON.

The Institutions Registration Department of Boston publishes in its Report for the year ending Jan. 31, 1902, an important study by John Koren, chief of its statistical division, on the subject of Juvenile Law-breakers in Boston. The study is divided into two parts, "arrests" and "disposition of juveniles arrested."

In the first part are given:—

(1) The number of arrests of persons under eighteen for each year of age for the years ending Oct. 1, 1896 to 1901, inclusive; also for the year 1889–90.

(2 and 3) The number of arrests for each offence for each year of age in 1900–01.

In the second part are given:—

(4) The disposition of cases in the lower courts according to age, and

(5) according to offence.

(6) A comparison of the dispositions made of cases by the various lower courts.

(7 and 8) The disposition of cases originating in the Superior Court, and

(9) The disposition of cases appealed to the Superior Court.

Under the head of arrests the leading and satisfactory fact is brought out that the number of persons under eighteen arrested by the police has practically not increased from the year ending Oct. 1, 1895, to the year 1899–1900, inclusive, and that the number was almost precisely the same in the last-named year as it was in 1890 (2,478 as against 2,487). In 1900–01 there was a slight increase, the number being 2,730; but this, as Mr. Koren has suggested, was undoubtedly entirely due to the good and strenuous work done that summer by Mr. Charles H. Kip, of the Society for the Prevention of Cruelty to Children, in his crusade of fifty-one nights to prevent newspaper selling—with its incidental accompaniments of begging, gambling, and picking pockets—by small children in the streets at night. Two circumstances—(1) that the increase is practically confined to the ages from eight to fourteen, inclusive, and (2) that the number of those giving their age as fourteen years increased 99, as compared with the previous year, while those giving their age as thirteen increased only 14—tend to substantiate this conclusion, fourteen being the age after which newsboys were then allowed to be out after eight o'clock. It is satisfactory to have from so careful a statistician as Mr. Koren a statement that "beyond such sporadic efforts there have been no changes in police methods, nor any other circumstances which tend to nullify the cheerful inferences to be made from this table."

Forty-two per cent. of the arrests in 1901 were of children of school age,—that is to say, under fourteen; and only 116 out of the 2,730 were girls. Mr. Koren points out that in the case of children under twelve "arrest" does not in most cases mean an actual arrest, but usually only a summons to appear in court, and that children under twelve held for trial must not be locked up, while but few, even over that age, are so in practice, the parents' recognizance usually being deemed sufficient.

The offences for which the arrests were made in 1900–01 (Table 2) varied from throwing snow-balls to manslaughter, 25 per cent. being for the sort of offence (like trespassing, stealing rides on frieght cars, playing ball in the streets) that may mean thoughtlessness, or merely that one is a boy, rather than having any criminal significance. "Violating city ordinance," for instance, gave 17.52 per cent. of the cases. Mr. Koren is, however, careful to point out that some arrests for these minor offences are really arrests of criminal boys who were brought into court on smaller crimes than some of those they had actually committed. The offence of being a stubborn child, for instance, which was the cause of 5.91 per cent. of the arrests, is often the excuse for arresting a child who has been guilty of something much worse, especially in the case of girls. The sentence imposed on a girl is often to the Industrial School during minority, but being a "stubborn child" is chosen as the excuse in order to soften the court record against her. Larceny is the largest single item, covering 27.12 per cent. of all the cases. One would like to know how many cases of larcency were for stealing coal or lead pipe, or for similar offences on the same moral level as that occupied by stealing apples on the part of a country boy. The ages 12 and 14 give more arrests for this offence than 17; and 10, 11, and 13 stand almost as high as 17. Breaking and entering, however, which can seldom be a very mild offence, furnished 13.42 per cent. of the arrests; and here, as in the case of larceny (and also of other more serious crimes), boys of fourteen and under furnished a notably large percentage of the cases (41.69 per cent. for this offence). As regards the more important crimes there has been no perceptible change for better or worse during the past ten years. The arrests for drunkenness show a falling off from 143 in 1899–90 to 52 in 1900–01, presumably due to the good work of our police commission in enforcing the liquor laws.

As to the causes of the favorable showing, Mr. Koren says no attempt has been made to localize the juvenile offenders or to show their relation to the different nationalities. It may, however, be interesting to note that a study of this same subject made by the present writer in

1899, covering the ten preceding years, and accepted at that time for publication by the Bureau of Municipal Statistics, gave the same favorable showing as the present study by Mr. Koren, and contained also the following studies:—

1. It showed that the proportional falling off in the number of arrests was in boys between 15 and 20 years old, there having been a great increase as regards those under 10, and a considerable increase for those between 10 and 15.

2. It included a study of arrests in certain police districts by classes of offences for every month from January, 1889, to December, 1898, inclusive, in order to determine whether North End Park or Charlesbank had produced results traceable in statistics. No conclusion, however, could be drawn, because, although there was a great falling off in the arrests in the neighborhood of those great play centres, a further study of

3. Juvenile crime by nationality in the city as a whole revealed the fact that the Jews, who had largely taken the place of the Irish in those districts, show a very much lower percentage of juvenile arrests than those whom they had thus displaced.

4. A study of arrests by ages and months for the ten years indicated that juvenile arrests were largely a question of weather, especially among the younger boys, a notable increase beginning in April and lasting through October, tending to show that law-breaking is largely a matter of sport rather than of business.

5. A careful inquiry made at the same time from the police captains elicited the opinions: *first*, that the Municipal Baths did have a great tendency to keep boys out of mischief; and, *second*, that the boys' clubs, especially those where dramatic entertainments were given by the boys themselves, had a marked tendency in the same direction.

Opinions since obtained from schoolmasters and other persons familiar with boys have been to the effect that a certain percentage (probably somewhere from 10 to 25 per cent.) of the newsboys get harm from their occupation, chiefly from the late hours and from having money that they cannot be obliged to account for. It is curious in this connection to notice that only 44 boys were arrested in 1900–01 for "gaming," as it is possible to see nearly that number gambling any night on which one cares to take the trouble to walk about a quarter of a mile in the vicinity of the theatres—Mason Street, in front of School Committee headquarters, being a favorite and appropriate resort.*

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*This was true last winter and spring, but the police are now taking more interest in street boys.

The second part of Mr. Koren's study is a good deal more than a study in statistics: it is in fact a careful dissertation, by one thoroughly familiar with the subject, on the actual procedure of our courts in dealing with boys. We have juvenile sessions, although we have no special juvenile courts. The father or mother, or, in their absence, the person with whom the child resides, is sent for; and, if they are not forthcoming, the Court may appoint somebody else to take the child's part. If the Court thinks it may want to commit the child to the State Board of Charity it must notify the Board and let the Board's agent investigate beforehand.

In disposing of a case, the Court may hand the child over for minority to the State Board of Charity, which in its turn may keep the child or hand it on to one of the two State reform schools, for boys (if under 15) and girls (if under 17), respectively. Or the Court may put the child on probation; or impose a fine; or send him (if over 12) to a county prison or to a reform school for the non-payment of a fine; or send him to some penal institution direct. (In addition to the Lyman School, which is carried on by the State, Boston and Salem have each a reform school for boys.) Sometimes a case is continued to allow time to pay a fine.

"In Boston there are eight Municipal Courts, each of which has jurisdiction in the case of juvenile offenders in its own district. The State Board of Charity has agents who attend trials of juvenile offenders in these courts. Each court has a probation officer. In the Central Court there are several probation officers, including two for women and girls. In these courts, excepting the Central Municipal Court as hereafter explained, the probation officers take charge of juveniles as well as adults. Sometimes, especially in the Central Municipal Court, an agent of the State Board of Charity acts as surety. In such cases, however, in the Central Court, an agent of the societies mentioned below performs the work of supervision, as well as in cases in which they are sureties." In the Central Court the Boston Children's Aid Society and the St. Vincent de Paul have each an agent; and the Court frequently turns children over to these agents to be looked after, making the same use of them that it might make of its own probation officer, the case being continued to a certain day meanwhile. When the day comes, it is very seldom found necessary to sentence the child, the friendly visitation and restraint on the part of the agents of these societies being in almost all cases efficacious, and being a beginning of a friendly relation which often lasts for years. The same societies send their agents to the seven other Municipal Courts, when sent for.

The most common dispositions of cases in the lower courts in Boston (all below the Superior Court) are as follows: fined, 36.43 per cent.;

probation, 15.68 per cent.; on file, 15 per cent.; to penal institutions, 10 per cent.

It will be seen that the most frequent sentence is the fine, which, as Mr. Koren points out, seems appropriate where mischief rather than crime is being punished, although less desirable when the offence has been a really criminal one, or where the non-payment of the fine results in an inappropriate imprisonment, not for committing an offence, but for having parents unwilling to pay the penalty. Fines, in the Central Court, are often merely nominal (58 were one cent and 98 one dollar, out of 766 cases).

Placing on file, which is resorted to in 15 per cent. of the cases, and amounts to practically doing nothing about the matter, seems to be used in some courts as a substitute for probation, but is entirely lacking in "the element of custodial supervision, which is the essence of the latter method." About 10 per cent. were sentenced to correctional institutions (exclusive of the parental school, which is the Boston Truant School), the different courts varying very much in this respect. It is especially interesting in this connection that almost all the cases appealed to the Superior Court received sentences much lighter than those appealed from, the greater use of probation by the higher court being especially notable. "Presumably all the cases were duly investigated by probation officers of the respective lower courts, who found that they could not recommend the clemency of probation. In the Superior Court, however, 52 per cent. of these boys were taken on probation, or almost the same number who had originally been sentenced to institutions. In every instance the boys who had been sentenced to the Lyman School, the House of Reformation, the House of Correction, and the Massachusetts Reformaory,—in all about 48 per cent. of the whole number who had appealed,—escaped with probation or had their cases placed on file. The seven candidates for the Massachusetts Reformatory were reduced to four."

JOSEPH LEE.

ATLAS OF INSURANCE.

Assecuranz-Atlas. Atlas des Assurances. (A presentation by statistics and graphics of the growth of the different forms of insurance in the various states, 1855–95. By Emil Stefan. French text by Al. Stefan. Printed and published by G. Freytag & Berndt, Vienna, 1901.)

The difficulty of compiling approximately accurate and complete insurance statistics for a series of years for even a single country will be appreciated by any one who has ever essayed the task. The compilation of accurate statistics of the various forms of insurance for all the countries in which insurances are effected may safely be said to be an impossible undertaking in the present condition of insurance records. Failure to accomplish the impossible is not a crime, and the author of the present work may be pardoned if he has fallen short in a task too big to achieve. He does not claim for his work completeness or perfection, but expresses the hope that with all its imperfections it may point the way to the publication of universal statistics of insurance and upon a wider basis than that presented in this preliminary Atlas. The careful reader will find that in some respects the author of this Atlas has fallen short of the easily possible in his self-imposed task. Writing from Austria, he seems to have labored under many difficulties, not the least of which was lack of reliable sources; and these hindrances have apparently increased directly as the distances of the countries observed from the point of observation of the writer.

At the beginning of the Atlas is given a list of the "oldest and largest" insurance companies. These are arranged alphabetically by countries. All kinds of insurance companies are here thrown indiscriminately together. From the list of insurance companies in the United States, no less than thirty regular life insurance companies doing business in 1895 are omitted. Size or age could not have been an excuse for the omissions; for such companies as the Connecticut General (1865), John Hancock Mutual (1862), Massachusetts Mutual (1851), Michigan Mutual (1867), Mutual Benefit (1845), New England Mutual (1844), North-western Mutual (1858), Prudential (1875), State Mutual of Massachusetts (1845), and Travelers (1866) are among those omitted. The purpose that such an imperfect list can serve is, to say the least, conjectural.

The first part of the work gives a statistical résumé of the various forms of insurance in such countries as the author found it possible to secure statistics. In some countries only life insurance is considered; but, in general, statistics are given for life, fire, marine, plate glass, hail, accident, transport risks, cattle, and miscellaneous classes of insurance. Statistics are given, where possible, for each of the years in the period 1875–95, inclusive. The items considered are insurance in force, new business, premium income, and claim payments. The severest criticism which can be passed upon this part of the work is that the sources of information are not indicated; and, with few exceptions, no statements are made of the steps taken to secure complete statistics. For example, no statement is given of the sources from which the statistics of life insurance in the United States were taken. There is no complete agreement with any figures that the writer has seen, and the figures given in the first table, page 46, are incomplete and in one respect misleading. The amount of life insurance in force with ordinary companies is given as less in 1894 and 1895 than in 1893. If the author had availed himself of the official statistics readily accessible in the annual reports of the New York Insurance Department or in the Spectator Year Book, he would not have made such an inexcusable blunder; nor would he have found a statistical basis for the false inference that the decline in the amount of insurance in force in the United States in 1894 and 1895, as compared with 1893, was due to an excessively high lapse rate.

The following statement shows the amount of life insurance in force with Ordinary Legal-Reserve companies in the United States during the period 1890–95:—

AMOUNT OF ORDINARY LIFE INSURANCE IN FORCE IN THE UNITED STATES.

Years.	According to Stefan.	According to Hoffman.*
1890	$3,620,259,570	$3,620,057,439
1891	3,861,584,383	3,964,491,593
1892	4,897,731,359	4,314,204,343
1893	5,291,586,114	4,629,774,861
1894	4,669,721,114	4,765,220,494
1895	4,881,632,161	4,917,694,131

The insurance statistics of Australia and Japan are dismissed in a few lines, while China, India, South Africa, Canada, Mexico, Central America, and South America are not mentioned. No reference is made to the assessment and fraternal insurance in force in the United States, although the amount is very considerable. Complete statistics of these forms of insurance are not available, but any thorough study of insurance statistics must recognize these methods of insurance provision.

The graphics illustrating the various tables form the second part of the Atlas. Of these there are one hundred and sixty-one diagrams and three maps. The maps illustrate the amounts of insurance in force in the various countries of the earth at three periods, 1855, 1875, and 1895.

In general the diagrams are well constructed, and serve the intended purpose of enabling the reader to comprehend the growth of insurance in the various countries more readily than by inspection of the tables. Exception may be taken to the form of some of the diagrams, notably No. 99, where varying amounts of losses paid are represented by horns of varying size, from which have poured heaps of coins, also of varying size. Diagrams of this sort make pretty pictures, but are bad graphics in a scientific work. "The test of all diagrams is that the diagram as drawn should afford the best view of the series, or groups of figures, that the eye can appreciate." A few of the diagrams in the work before us fail to meet this test; but, as before stated, the most of them are well constructed.

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* Statistical Abstract of the United States, 1902, p. 429.

In conclusion it may be said that the Atlas is a perfect specimen of the printer's art. The printing is excellent throughout, and the reproduction of the color diagrams is perfectly done.

F. S. CRUM.

A MORTALITY INVESTIGATION.

This great undertaking of the Actuarial Society of America, now fully completed, was a specialized investigation. The society concluded that for the present the existing mortality tables were quite satisfactory indices of the general rate of mortality among insured lives, and that—in the language of Mr. Emory McClintock—"it is now more desirable to learn how fishermen compare with farmers, how physicians compare with clergymen and the like, than it is to gather all these heterogeneous classes into one grand average in the form of a new life table." In October, 1900, the society appointed a committee of five, with Mr. McClintock as chairman, to consider the practicability of undertaking an examination of the mortality experience among different classes of insured lives. In May, 1901, after many sessions, the committee reported unanimously in favor of investigating certain classes ot risks, of which they submitted a schedule. The committee's recommendations were adopted unanimously, and they were requested to take charge of the work. They immediately sent the companies blank forms upon which to report the needed data, with full directions as to the method of reporting. Somewhat later Mr. John K. Gore, actuary of the Prudential Insurance Company, was added to the committee, and put in charge of the practical work.

To give in detail a full description of all the ninety-eight classifications would occupy many pages, so only a general sketch can be given. Three classes have reference to the amount of the policy or the plan on which it was issued. There are four classifications with regard to race: thirty-five with regard to occupation; fourteen classes have reference to the weight combined with what is known as the "Family Record" of the insured; two classes refer to height alone, and two to family record alone; and twenty-two classes refer to residence only.

The committee decided not to consider any insurances issued before 1870, as the volume of business prior to that date was very small. The data furnished by the companies end with the issue of 1899, so that exactly thirty years' issues will be reported. About one-half of the policies issued will not fall under any of the classifications, though in some few cases one policy will fall into as many as five or six classes. A separate card is used for each policy in each classification under which it is included. About three millions of cards have been used in the tabulations.

A brief sketch of some of the classifications may properly be given here:—

1. $20,000 or more insurance granted at same time in a single company.

2. Policy issued for an amount less than requested.

3. Policy issued on a plan different from that requested.

4. Born in Germany.

5. Born in Ireland.

6. Born in Sweden or Norway.

7. Colored.

8 to 42. Various occupations.

43 to 58. "Personal Record":

thus 43. Insured has intermittent or irregular pulse;

and 44. Insured has pulse below 60.

59 to 72. Weight combined with Family Record:

thus 59. Weight say over 200 lbs., with height 5 ft. 10, and neither parent noted as dead at an age under 70.

73. Height above 6 ft. 3 inches.

74. Height below 5 ft.

75. Parent, brother, or sister, died of cancer.

76. Parent, brother, or sister, has been insane.

77 to 98. Residences by counties: with two exceptions these are all counties in Southern States, containing cities where considerable numbers of persons have been insured. The exceptions are Arapahoe County, Colorado, in which Denver is located, and Santa Fé County, New Mexico.

The sorting of the cards for the computation of the statistics has been done by a machine invented by Mr. John K. Gore, actuary of the Prudential Insurance Company. Each card is punched with holes indicating by their positions the class to which the policy belonged, the age at issue, the duration of experience, etc. The machine automatically picks out each card belonging to each class, then sorts them according to age, then according to duration, etc., as may be desired.

Those who may desire a fuller description of the work may obtain more extended details from a fully illustrated article by the writer in the *Journal of the* [*British*] *Institute of Actuaries*, April, 1902.

The preparation of the data was begun in May, 1901, and finished shortly after the middle of 1902. The committee had hoped to be able to complete their investigation early this year and present the results to the Actuarial Society at its annual meeting in May, 1903; but the work proved too vast for completion by that time. Their report was published in August, 1903, and presented at the International Congress of Actuaries, at which Secretary Cortelyou presided, New York, September, 1903. Copies of the full report (price $6) or of the summary ($2) may be obtained from John Tatlock, Secretary, A. S. A., 32 Nassau Street, New York.

DAVID PARKS FACKLER.

MERCANTILE WAGES AND SALARIES.

The Massachusetts Bureau of Statistics of Labor has recently opened up a new line of investigation, an inquiry into the wages and salaries of persons engaged in mercantile employment. The results of the first investigation of this sort have recently been published as Part III. of the Bureau's Report for 1902.

The inquiry covers only the congested business section of Boston between Cornhill and Boylston and Washington and Tremont Streets. 455 establishments were visited, and are classified into "individuals," "firms," and "corporations." This classification runs all through the tables in an evident effort to trace some connection between wages and the form of organization of the establishment. No such connection appears. The 455 establishments cover nearly every kind of retail business in the city, jewelry and silverware leading the list with 33, men's clothing second with 32, boots and shoes, men's furnishings, and liquors 28 each, millinery 24, etc. There are 16 dry-goods stores, but only 3 department stores are represented; these 3 employed 2,373 persons, or 25.1 per cent. of the 9,454 falling under the investigation. 54.2 per cent. of the total number were males, 45.8 females.

The first wage table given is that of "Graded Weekly Wages and Salaries" by sex, kind of business, branch of occupation (book-keeper, buyer, errand boy, etc.), and form of organization. Wages are here classified into the familiar high, medium high, medium, medium low, and low,—a classification dependent largely on the subjective estimation of the enumerator, and of incomparably less value than would be a classification into definite wage groups. The Report defends the system by remarking, "It is distinctive in that for each occupation it shows not only the high and low wages, but the intermediate rates which must necessarily be considered if we would arrive at reliable conclusions relative to the wage question." True, so far as it goes; but we need also to know the actual or relative numbers receiving the "high," the "medium high," or the "low" wages, respectively.

The next table considers "Average Weekly Wages and Salaries" by sex, kind of business, and branch of occupation. Here, for instance, we find the average wage of male book-keepers in the carpet business to be $28, and of females $9.07. This sort of average is usable and not misleading, for it averages only closely similar quantities. This is the most valuable and interesting of the tables.

Two other tables give the branches of occupation represented in various wage groups, "$2, but under $3," etc., and compare the wages of males and females in the various occupations. It is a comment upon our ideas of commercial equity that in several cases the wages of women are less than one-half those of men doing apparently the same work. In 3 out of the 44 occupations here considered the wages of the two sexes are substantially the same, in 5 the wages of females exceed those of males by amounts ranging from $0.25 for floor girls to $7.65 for assistant buyers, while in the other 36 cases the wages of males are mostly from 25 per cent. to 50 per cent. above those of females. The highest salary is $81 a week for female buyers, $125 a week for male buyers and managers.

The Report will be found valuable to all students of wages and social conditions, and especially to those engaged in any local investigation of the city's population. If we can secure detailed and accurate statistics of local phenomena in place of or in addition to a great mass of general and often vague figures and "averages" for the whole state or nation, we are taking a much-needed step. In an attempt to investigate the housing condition of this very class of mercantile wage-earners the writer has encountered no more discouraging obstacle than the lack of detailed and refined city statistics.

A. B. W.

STATISTICS OF INSANITY.

In a pamphlet of fifteen pages, reprinted from the *Bulletin of Institutions of Iowa* for July, 1903, F. I. Herriott, professor of economics and political science at Drake University, publishes some notes on occupations, general health, and diseases in insanity. The immediate purpose of this study is to offer suggestions on the classification of statistical returns of institutions rather than final results of investigations. Efforts of this kind are always welcome. The statistical output of institutions, particularly as it relates to insanity, is notoriously chaotic and unsatisfactory. Perhaps it is inevitable that it should remain so for some time to come, at least in certain respects. The old nomenclature of mental diseases is undergoing a rapid and radical transformation, and until the alienists themselves agree upon terms and the meaning of terms it is rather hopeless for others to try to work out comprehensive schedules relating to such matters as physical condition and the causes of insanity.

Considering the inevitable limitations of a statistical investigation of insanity,—and Professor Herriott is fully alive to them,—the greatest value of his paper lies in the suggestions he makes for a more rational classification of occupations. As he points out, "there has not been any systematic attempt at a classification of occupations with a view to discovering the relative frequency of insanity within well-defined groups or classes of occupations."

For the purposes of his study he arranges occupations under ten general titles: agricultural and rural; commercial or mercantile; manufacturing and mechanical (with thirteen sub-groups); communication and transportation; professional; clerical; domestic and personal; public service; non-industrial; and no occupation, the last group comprehending "that varying and indeterminate class of men and women of leisure who appear in the returns of insanity."

Applied to persons engaged in gainful occupations in Iowa, this classification affords an exhibit quite different from that presented by the United States Census, and tends to disturb commonly accepted notions in regard to the character of the population in Iowa and its industrial pursuits. Thus it is found that but 47.1 per cent. of those engaged in gainful pursuits are busy in agriculture and rural occupations. When applied to the inmates of the insane hospital at Clarinda (the particular institution under study), the classification brings out other facts that "do not square with popular views and assumptions." For instance, the reverse of the oft-repeated claim that farmers' wives exceed all other classes in the numbers that go insane is found to be true. Another unexpected fact is that 59.6 per cent. of the insanity in the Clarinda institution during a decade occurred among persons living in towns and cities and engaged in commercial and urban pursuits.

That part of Professor Herriott's paper which deals with the physical condition of the insane, causes of insanity and of death of the insane, is not likely to meet with the unqualified approval of the alienists; for these gentlemen are far from agreeing among themselves. A satisfactory statistical treatment of these matters is exceedingly difficult, if not impossible, at the present time. But that should not deter one from attempts like Professor Herriott's. They at least help to pave the way for larger excursions into this difficult field.

John Koren.

A CITY FACTORY DISTRICT.

South End Factory Operatives: Employment and Residence. A monograph by Roswell F. Phelps, A.M. Published by the South End House Association, 20 Union Park, Boston.

This monograph is the result of an exhaustive investigation carried on by Mr. Phelps during a two years' residence in the South End House Settlement as a holder of the South End House Fellowship maintained by graduates of Harvard University living in Boston.

The field covered by this investigation is comparatively narrow, and the figures dealt with small; but, while this would naturally tend to detract from the reliability of averages and general inferences, it has had the compensating advantage of admitting of great accuracy in the data secured and of a searching and vital analysis of the results attained. The writer in his intercourse with the employers and employees of the district has learned much more than could possibly be conveyed by the statistics which he has thus been enabled to gather. The results of this close personal contact appear in the explanatory text, which gives evidence of a sympathetic understanding of social conditions often so utterly lacking in official statistical work.

The South End Factory district is a small area of made land in Ward IX., bordering on what is known as the South Bay. The writer gives a brief historical sketch of this section of Boston, and describes the various phases of its physical, social, and economic development and present condition. In this district are located 118 factories of various kinds, employing approximately 2,000 hands. It is these

2,000 laborers, or rather 1,102 of them whose addresses he was able to secure, that Mr. Phelps has made the special subject of his investigation. He ascertained by most careful inquiry the place of residence and the wages of all of these persons, visited many of them in their homes, and found out by consulting the assessors' books the amount and character of the property owned by a large number of them. From these and other data he has prepared maps and tables showing groupings of residences as regards distance from the factories. He found that the more poorly paid operatives, as a rule, lived within walking distance of the factories, that the more skilful and intelligent were able to take advantage of street-car facilities, and enjoy the better and more healthful residences available in the suburbs or remoter parts of the city. He made a special study of the transit problem by steam as well as electric cars, and sets forth the advantage that the elevated road, then just completed, affords this class of people.

As a result of this study, he concludes that all influences and opportunities which tend toward decentralization make for the best interest of this class of people. Philanthropy which builds sanitary and attractive tenement houses in congested districts is of doubtful expediency; but all efforts in the direction of overcoming "residential inertia" by affording cheap transportation and attractive surburban homes are, for Boston at least, steps in the right direction for the ultimate solution of a proper housing for the working class.

Whether we agree with Mr. Phelps in his conclusions or not, we cannot fail to recognize the merit of the contribution in the form of accurate and well-arranged data which he has made to the study of practical sociology.

C. W. DOTEN.